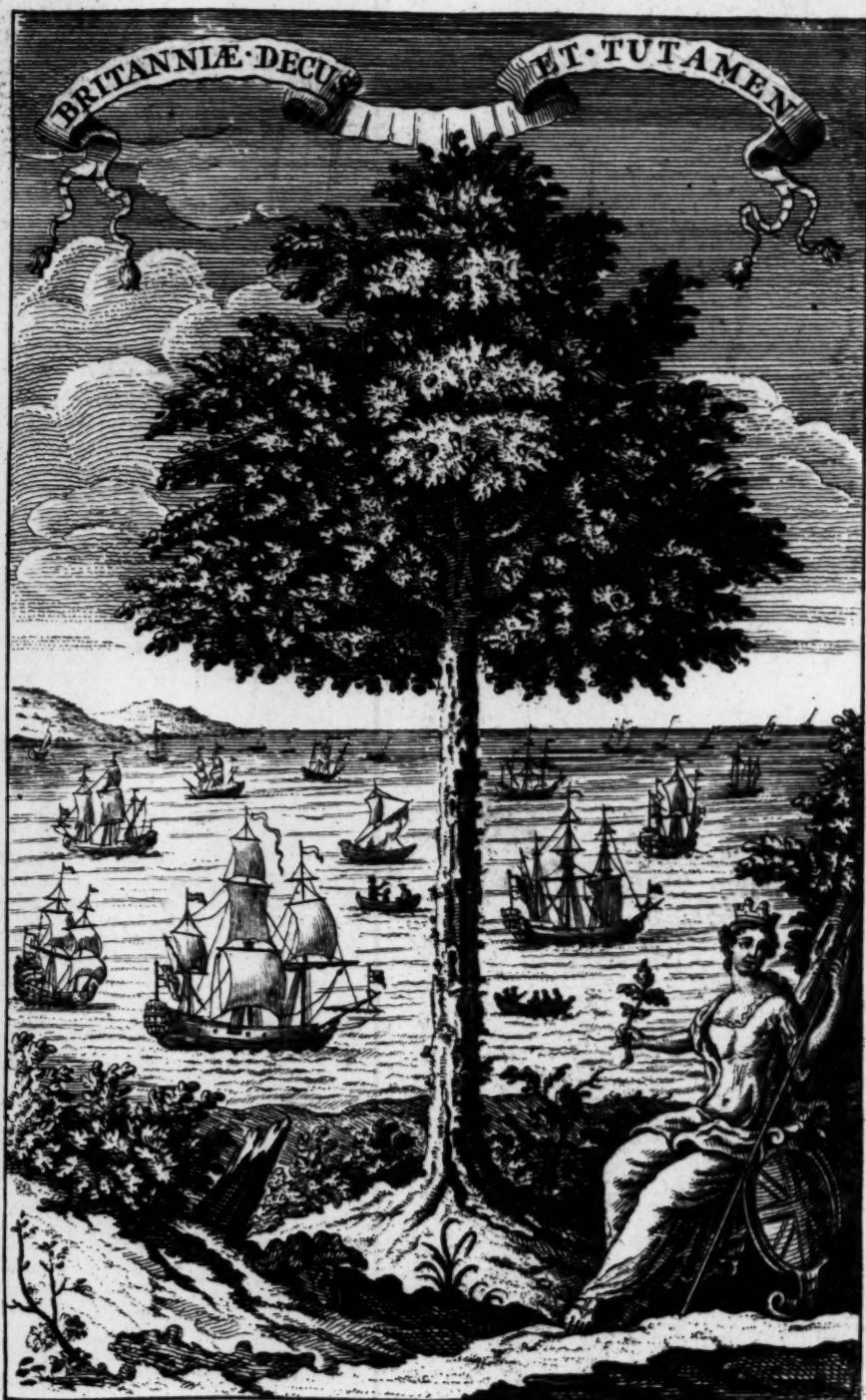


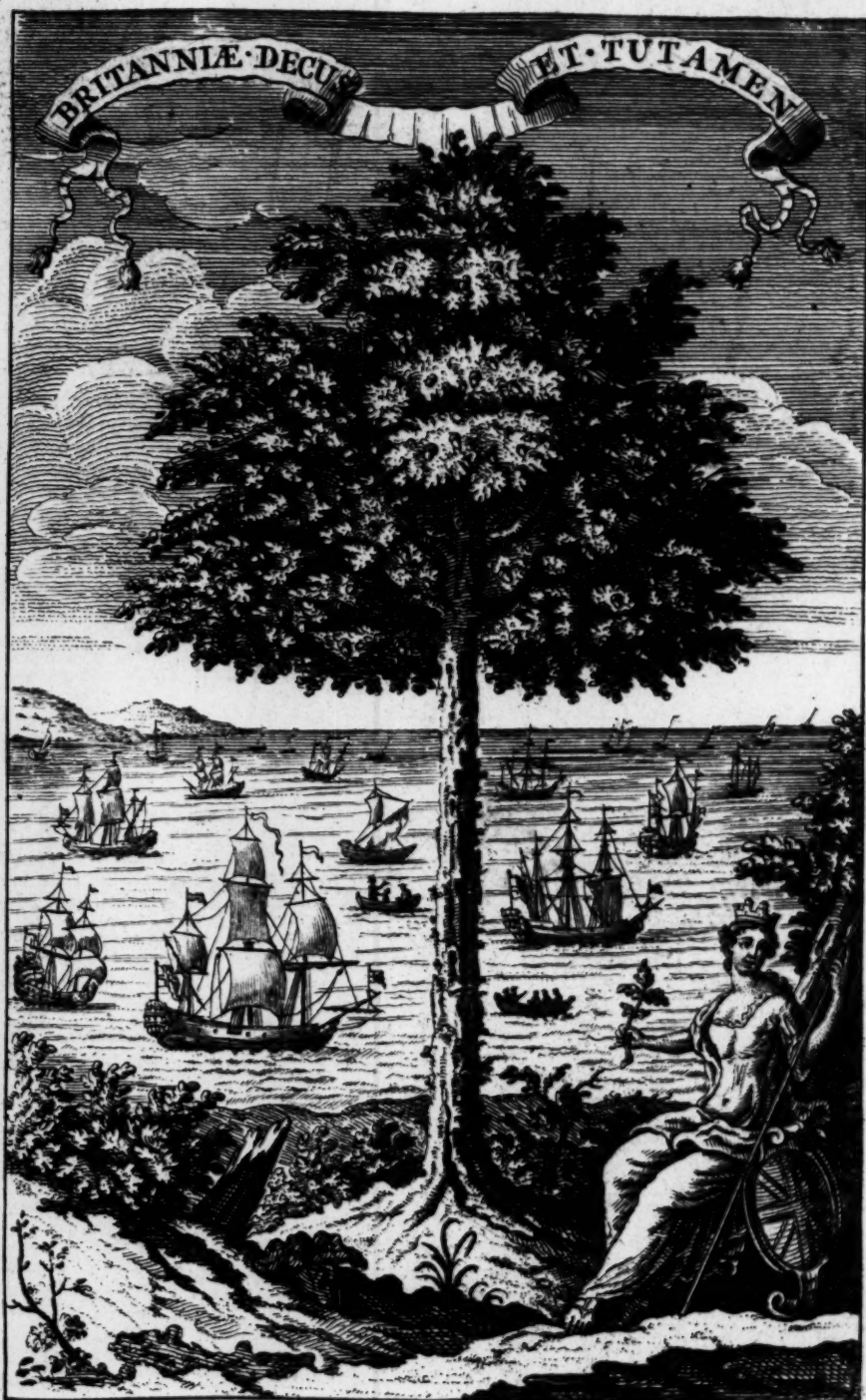


J. Kerby inv.

J. Mynde sc.

*Quantum
Santum*

X



J. Kerby inv.

J. Mynde sc.

Quantum
Santum

X

1485. H 82.

THE
MODERN DRUID,
CONTAINING
INSTRUCTIONS
Founded on Physical REASONS,
Confirmed by long PRACTICE,
And evidenced by PRECEDENTS,
For the much better CULTURE
OF YOUNG OAKS

MORE PARTICULARLY,
Than what they have been Subject to by
any Late Discipline:

WITH
Various Reflections interspersed on the Occasion.

*Avia (Quercicolis) peragro loca, nullius ante
Trita Solo*

Volvenda dies En! attulit ultro.

By JAMES WHEELER, Gent.

L O N D O N:

Printed for the AUTHOR: And sold by C. DAVIS,
opposite Gray's-Inn Gate, Holbourn; and J. CLARKE,
under the Royal-Exchange, Cornhill. M.DCC.XLVII.



TO THE
NOBILITY and the GENTRY
OF
GREAT BRITAIN,

Proprietors of Woods, Chaces, Wafts,
Parks, or Pastures, or any kindly Soils
Productive of the O A K—

Most Noble Lords and Gentlemen,

THE Compass of the Field
of Nature being as exten-
sive as the Subjects thereof
are various, and the Æra of experi-
mental

DEDICATION.

mental Science therein, but late, in comparifon of the age of the World; It is no wonder that many Errors thro' a speculative inadvertency, and a reliance on defective Hypothefes only, in Natural Philosophy, have been received by Mankind and even attained an Eftablifhment by the authority of Great Names: Which feverally in their Turns, have occasionally hoodwink'd Reason, blinded the Senses of, and at laft left all their Followers in the dark.

ON thefe Confiderations, my own Senfe, and dear bought Knowledge thereof on the Point depending, a Natural concern for others Welfare in the like cafe, and withal the
great

DEDICATION.

great sufferance of Particulars and the Publick thereby, without a singular regard to any present Interest, or Reputation of my own, have induced me Humbly to lay before you, the ensuing Treatise; containing a variety of unwearied Experiments, and Observations relating to the better Culture of that most valuable and August Tree, the Oak.

AND I flatter my self, that but few circumstances of any great Importance have wholly escaped my Attention; altho' I have not the Vanity to imagine, but that great improvements may be added thereto, by the Sagacity, and Judgment of others, who will give themselves

DEDICATION.

the trouble of persuing the same Subject.

It were indeed at present to be wished, that where Fortune has bestowed (tho' so far only) the knowledge of a successful Form of artful Practice on the Oak, it had not denied both the Gift and Propriety of an elaborate Description of it : as in its natural Productions alone, it is the Source of all the Riches and Strength of *Britons*, and a ministerial Defender of our Lives and Liberties against Foreigners.

I HOPE however to have succeeded, tho' not in a Polite, yet in a middle manner between extreams ;
as

DEDICATION.

as the case will be found necessary to be, in my endeavour to support my Reasons intelligibly to every Reader, on the plainest Evidences, that my Observations and Experiments suggested to me: And the rather, as I have not confided overmuch in Notional Niceties, or presumed to dive into the Minutiæ of things.

WHERE I have ventur'd to Philosophise, I have been studious to do it with allowable moderation, and without arguing upon the Stretch.

AND altho' I may not be quite clear in some Principles of this abstruse kind of Philosophy; yet for
the

DEDICATION.

the avowed Success of the Mechanism herein recommended; of which you will meet with the strongest Evidence possible in a Writer: Give me leave, Most Noble Lords and Gentlemen, to set forth with all due Submission the following Scheme under Your Patronage and Protection; till fair Trials thereof may be made by judicious Hands. Especially as the Salvage of your Property in the general of this kind, not my own Private Ambition has induced me to the Boldness of This my so general Address to You.

ON the Humble Hope of a fortunate Event, every way hereof; I found my Prosecution of a further
Design

DEDICATION.

Design to submit some different
Branches of Argument on the same
Subject, to your further Animad-
version.

Being on all occasions

Your most Devoted

And most Humble Servant,

JAMES WHEELER.

DEDICATION

Desire to submit some different
Branches of Argument on the same
Subject to your further Consider-
ation.

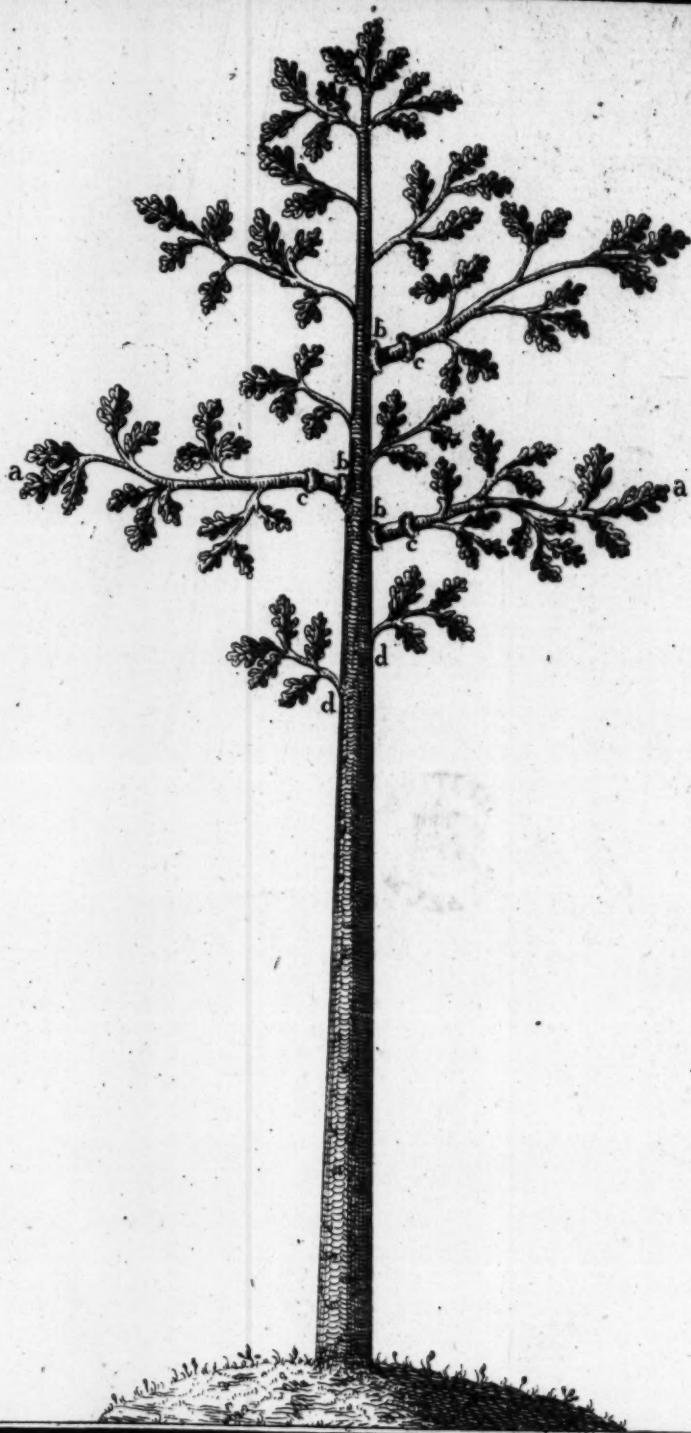
Being on all occasions

Yours most Devoted

And most Humble Servant,

JAMES WHEATLEY.





The Explanation of the Plate of the Tree.

c. b. **T**HE two Barkrings of the lowest Bough debarkt.

a. The Place where the first approaching mortality thereon, usually appears.

c. b. The two Barkrings again, of the Bough above the former debarkt.

a. The first dying part usually, of that Bough likewise as aforefaid.

c. b. The third being the uppermost bough debarkt.

d. d. Two small Boughs left to arrest the ascending Sap against the next debarking time appointed. x

N. B. BETWEEN the uppermost Bough debarkt, and the middle one, are also two small boughs left, for the aforementioned reason.

WITHAL—If an Oak is so young and small as the Plate represents ; The two lower boughs only, had been sufficient to be debarkt the first operation.

Memorandum,

NONE of the small Twigs are described in the Plate, which are intended, as will be further shewn, for Contusion ; as they would possibly have been a hinderance to a plain View of the other operations described. But are productions which will usually be found naturally growing on most Oaks.



A Perfect Copy of Dr *Grew's* Description, by the help of a Microscope, of one fourth part of an Oak branch, being near an Inch in Diameter.

N. B.

ALTHO' the Engraver of the Original Plate has performed his Part very justly, yet by some means or other the Referential Letters therein and around the sides are very Erroneous, as will be found by any Person who will give himself the trouble of looking into Dr. *Grew's* either Folio, or Octavo Copy—Which Errors I have endeavour'd to correct in this.

A B C D. The Bark.

A B. The Skin.

X Y. X Y. X Y. The Parenchyma.

D Q R C. The common Lymphæducts, between the Bark and Wood.

H I, A Ring of another sort of Lymphæducts.

K L A I.

K L A I. A sort of Resiniferous
Vessels postur'd in fe-
veral round Parcels.

D C F E. The wood included be-
tween the same.

Z Z. The inner part of the
wood again described.

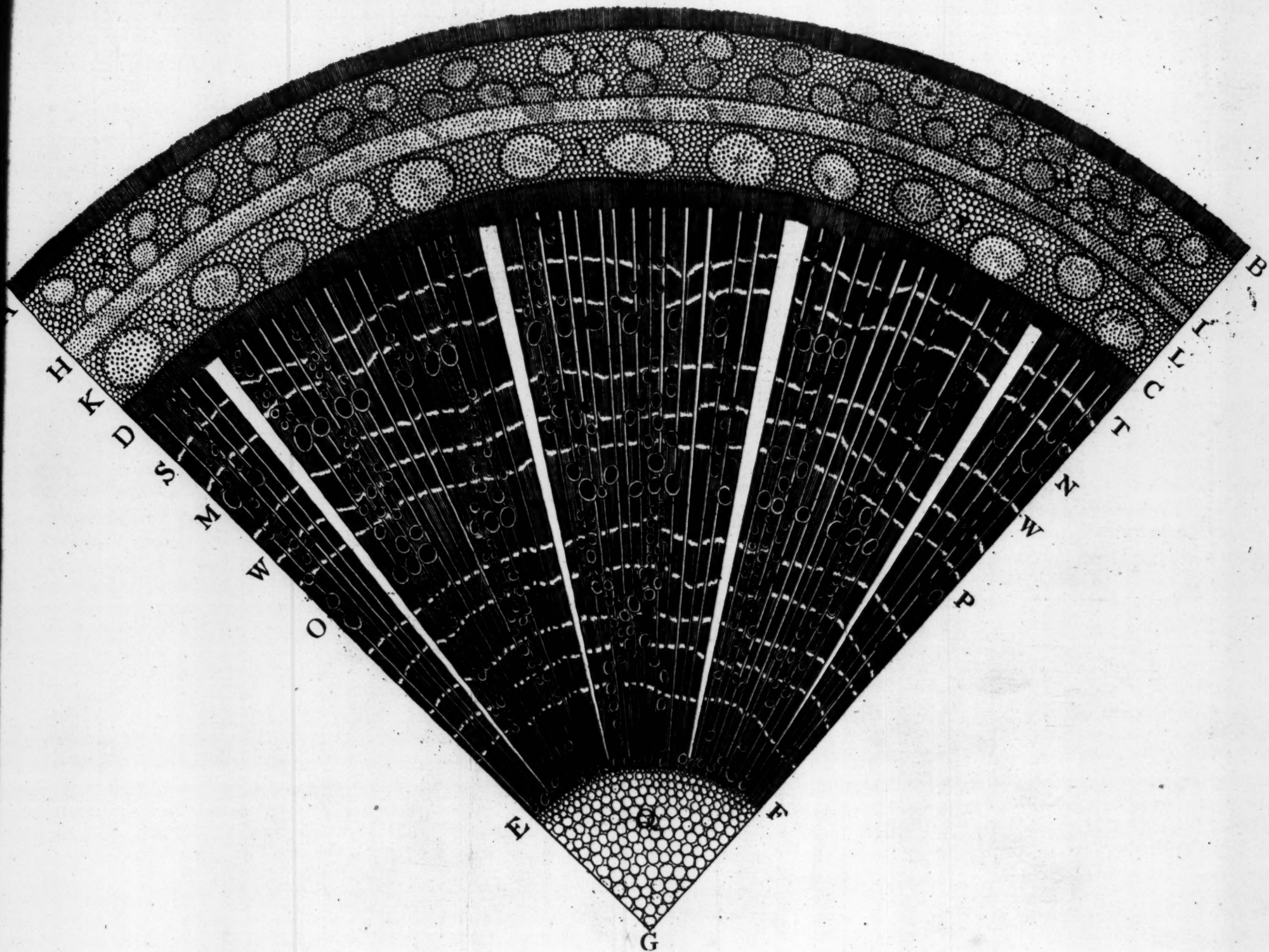
From S T to near E F. Several undulated
Whiteneffes denoting the several an-
nual Rings of Wood.

Q Q Q Q. The large Horizontal In-
sertions running from
the outer Ring of
Wood to the Center
of such Tree.

Between which and noted by R R R are
described the smaller Insertions.

E E G Q. The Pith.

Between D S M W O E and C T N
W P F Are great numbers of Tu-
bulous Vessels Denoting an Employ-
ment severally for Air and Sap, and
perhaps combinedly, as Nature's occa-
sions may demand.





MODERN DRUID:

O R,
A DISCOURSE on a new Manner
of CULTURE of the OAK, in his
Majesty's BRITISH Dominions.

CHAPTER I.

Phæbe fave, novus ingreditur tua templa sacerdos.
Tibull. ad Apoll.



HAD it been customary in the age
and times of *Tibullus*, for *Pro-*
saic writers of this kind, on
their first attempt, to have in-
voked the assistance of the God
of wisdom ; it would have been found that
they had more occasion for such aid, than

B

on

on any subjects to be handled, of his sort. That the difficulty at least herein is very great, may be learned from a most experienced modern author of like kind, namely Monsieur de la *Quintinye*; who says, "That in
 "all that variety of speculations, that serve
 "for the entertainment of our intellectual
 "faculties, there is not any subject more
 "nice, and intricate to adjust rightly, than
 "that of vegetation."

THAT those persons therefore, who may unadvisedly take this *Treat* in hand, to read with the soft view of pleasurable amusement only, may not on their first disappointment, lay it down again, on too hasty a dissatisfaction, without the chance of being reconciled to proceed, by some respite from a continual and uninterrupted attention to any chargeable abstruseness by them, in a part, or two—

As also on the hopes to inure even such the better, to the burthen of a little more thought than they might otherwise be inclined to bestow upon it—

AND

AND likewise because herein are contained divers heads that have no direct relation to the practice recommended; I have ventured on a supposed propriety to divide the whole into short chapters.—

NOR have I reason to suppose other, but that the long reading of dry rules barren of all delightful entertainment, and in a large quantity at once, would go down the stomach of the most studious devotee this way, only as *physick* does for the bare benefit—

BUT more of this kind, may draw upon me the charge of an affectation of a formal *Introduction* to, as in reality I have incurred that of a presumptuous *Dedication* of the few following pages—

As to other inaccuracies in my manner of writing, I would not willingly have them be placed to a slothful incuriousness in me— Or a disrespectful neglect of the humble devoir due from me to a candid reader's attention—But as I am in justest forms nor skilled, nor studious: And purely as my

Country, unapt and artless therein, does prompt me on ; and the short *sylvan* tale before untold—

FIRST then, without pretending to have more knowledge in the affair of vegetation in general, than many others have in common with myself, however I am attached to this one object, and zealously entering on the subject about it ; yet I shall not hurry the reader on to any of the *mechanical* points, as I think it not proper to go upon them, till a necessary occasion for the same is examined—divers propositions established—the nature of my method of performance a little discussed—reasons given for the peculiarity of diction—the *delightfulness* of the season for the practice recommended—and various collateral reflections thereupon urged—All which lying in one previous collection, the several *didactic* parts and their more immediate relatives will afterward lie the closer together, and become thereby, both the more easily conceived and remembered, than if interwoven with so many circumstances, as a novelty of this kind would make the greater interlocution. Inasmuch as such seeming round about, will in the end

end be found the very nearest way out of the wood we are going into.

ACCORDINGLY the first propositions, are, that tho' the Oak above any other kinds of the sylvaticks, has, to outward appearances, rejected the interposition of any regal dominion of man, over the peculiarity of it's customary manner of growing, after it is past the largest of the feminary sizes, (the first proper time to subject it to the new pupilage here intended)—Again, tho' even before such time, but more especially thence forward, it has seemingly delighted in lawless—spontaneous—and uncontrollable. liberty in it's habitual modes of vegetation: As if averse to any artful tuition, whereby a greater bodily longitude than usual—more magnificent structure—and every way greater and speedier perfection of it's nature, might be attained. To be yet more comprehensive—That tho' the Oak has not only superficially a like self-will'd, inbred impulse, even invincible disaffections, as to vulgar apprehension, but has really on experience dearly bought, and ever unsuccessful, however oft repeated, eluded all attempts of the greatest artists, forcibly to overcome such, it's thence tacitly, heredi-

tary and indefeasible right of opposition to their fond purposes.—So as to establish universally the misconception of some unalterable and necessary opponent motion to their designs, impressed thereon at the creation—

YET nevertheless among the many other things in terræculture, which time has brought to light ; I have taken upon me to evidence, that we have, it *entirely* in our power, both to amend the most orderly and regular, as well as to correct the disorderly motions of the sap in the younger sort of growing Oaks ; and even in some measure to rectify the past irregularities of the old—And further I am so express, as to maintain, that, there is not the least indocility in any one thriving young Oak, to the laws of mechanism—no innate aversion to human art—no unalterable self proclivity, or independency in the form of it's vegetating—and nothing like an inherent prerogative of it's being therein a free agent—But that all the before seeming untoward opposition and disaffected qualities in it's nature, to our past wishes and even baffled trials ; proceeded only from it's before veiled personal and natural impotence, inward and outward—from
none

none at all, or a wrong discipline—from unfavourable soils—and even in the best, from adverse accidents, or malevolent seasons; which, in *England*, I may call *climatick*; and finally that in truth it turns out in the respect alluded to, instead of being a sovereign agent as to it's self, a *helpless* patient.

It will not be amiss to be carried in mind by the attentive, that the vigorous youthful *terræ filii* here meant, and born in destined soils, are those only to be intitled to the highest preeminence hereafter promised: For as to the unhappy junior *indigenæ* brought forth in poor—lean—gravelly—or any other impropitious earths; I set down such poltron offsprings, before I proceed any further, among the *Incurabili*. As I am not setting up a stage,

Nor have I “ Pills
“ To cure all ills.”

How empirically at first soever, the extent of my pre-pretended knowledge was arrived at in prescriptions thereto promoting. Nor am I dressing up my garland with artificial flowers in opposition to forms natural; but only to outvy them.

AGAIN, as they are a sort of foreign dominions we are entering into, and the ways but little levelled, I think it to favour the rout I propose to take, to alledge the precedent, that where there has seemed to have been an insuperable superiority of the powers of nature, over those of art, yet that the latter has almost, if not entirely got the ascendant. As is to be found in that fortunate *Hit* which has enriched the whole world with so many fine fruits; I mean the art of *engrafting*. The first experiment of which kind, might likely have been thought by an unenterprising by-stander but a *Lusus futilis*; and that at highest, no other than some motley birth could proceed from the perverse copulation of an apple and a crab; like as in animals the mule, or any other heterogeneous commixture in specie. But the different event thereon, as well known to every naturalist, has been cried up by some of the learned, as the triumph of art over nature: which altho' contended by others to be nature's triumph still; either construction will be found to serve my purpose without entering into a controversy, that promises to draw me too far from my purpose. For tho' I set
not

not myself to a mathematical closeness, I shall endeavour not to go out of view of my subject.

WHENCE, it is proper to moralize a little upon the precedent spoken of ; as that there must be affections in nature to cooperate with the intermediate mechanician, or he will lose the field instead of gaining an entire conquest. But how ticklish in themselves, and how occult to us those affections are in the case of engrafting, (as far as that will weigh) is surprisingly evident, from some experiments I made out of mere curiosity. For altho' the cyon of a rich tasted species of pear, will with kind passion unite with the rough juice of a quince stock ; Or the cyon of an apple of like excellence, with the hardest crab : Yet will neither grow *vice versa* ; to be of any duration. *Viz.* a quince upon a luscious pear, or a crab upon a high flavoured apple stock. Thus there is required a conformable power in the agent, and an aptitude of disposition in the patient, to make an effect in nature certain—regular—and lasting.—

BUT maxims without *examples* given, lose half their force. Whence I was induced to
recite

recite by way of confirmation, the before mentioned respectable instance, against there be occasion to apply it. Which rule of judgment not thence alone, but from divers other experiments ; I having early formed and followed in this whole design, makes me not slip this opportunity to obviate any reader's mistrust, that I may be about the making him wings to fly to the moon, or pumps to walk upon unfrozen water.

My next punctual obligation is, to intimate the form of my delivering what I have to offer hereon ; as wherein the weakness, or strength of my arguments will lie. In which I find myself happily præadvised by the Honourable Mr. *Boyle*. Wherefore as the same may be a guide to some reader's caution, or confidence therein, I will recite his own words, as they will add dignity to the import.

“ WHEN a writer acquaints me only with
 “ his own thoughts, or conjectures, with-
 “ out enriching his discourse, with any real
 “ experiments, or observations, if he be
 “ mistaken in his ratiocination, I am in
 “ some danger of erring with him, and am
 “ at

“ at least like to lose my time, without re-
 “ ceiving any valuable compensation for so
 “ great a loss ; But if a writer endeavours
 “ by new and real observations, and expe-
 “ riments to credit his opinions, the case is
 “ much otherwise ; for let his opinions be
 “ never so false (his experiments being true)
 “ I am not obliged to believe the former,
 “ and am left at my liberty to benefit my
 “ self by the latter ; and altho’ he has er-
 “ roneously superstructed upon his experi-
 “ ments, yet the foundation being solid, a
 “ more wary builder may be much fur-
 “ thered by it, in the erection of a more
 “ judicious and consistent fabrick.”

BUT he has unhappily in some other par-
 ticulars, left me to steer my way in this phy-
 sical ocean without a compass ; and in places
 too where I much want one—Since should
 this little piece peradventure make it’s appear-
 ance in polite company, that the same should
 have worn a polite dress of stile. And what
 perplexes the matter, is, that the modern
 habit and mode of writing, which is most
 taking with such, is not so to another sett
 of readers, is indeed but partially intelligible.

THE *authentic* academian and *precise* physiologist, will nauseate a breach upon the accustomed form of diction in physicks, next to the want of sense : But in cases so much available to a general good, What! if for once, custom was superseded, and their beloved science (if I may be so bold as to presume any part herein contained, has a just relation thereto) in like manner as now *law*, was tortured to speak right down *English*—Especially as they very differently from empirics of any kind, clothe not their thoughts designedly in jargon, with design only not to be understood by the vulgar?

AGAIN, of what emolument would *technical terms*, or *philosophical idioms*, (all very proper indeed where learned men only are supposed to be the readers) be to many who have truly gentlemen's estates, but have not had a liberal education; and may still be the happy proprietors of many woods, and have the disposition to plant more? Who again may have no *Cyclopædia* to apply to for an explanation of either the like terms, or idioms, or the *etymologies* of Greek and Latin words.

I COME

I COME next to shew cause for a more than ordinary plain and intelligible stile ; as I design this tract mostly, for a manual for the subordinate *agents* of Oak proprietors, that shall think fit to put my rules in execution. And as such agents are likely many times to be left to themselves, I think it necessary, whatever circumlocution I make use of, that they be instructed in every obvious appendant to their employment—in each circumstantial inducement to action—in every ground of success, or disappointment—even in all parts of the practice that is explainable to their mother sense, from visible appearances—Which will save the wood proprietor himself much trouble, if I had only left him to be their instructor, by discussing such matters written wholly in a physical form. It is for this reason also that I have proceeded on the most obvious principles—framed my positions as far as I am able to vulgar apprehension—and with phraseology, as before intimated, to low capacities.—

YET I do not intend my manner so abject thro'out, but that I may hope, tho' not delightfully

lightly to instruct; yet calling to my aid the dignity of my subject and great consequence thereof; to be able to gain a favourable attention of the literate proprietors of Oaks in propitious soils: Who disdain not to hear from a person so little known, how greatly nature may be improved by art: And particularly so, if either the allurements of curiosity—the diversion of philosophical experiments—the certainty of future gain—the powers of beauty—the admiration of grandeur—or the inviting charms of novelty have an attracting influence over them,—

I SHOULD not however have trusted to any eloquence of mine, or hardly to my deeds therein to revive the dying passion of many individuals in this age, for promoting any way the increase of these happy treasures; were I not otherways assured of gaining to my side, the *political patriot*—the *provident parent*—and the *hopeful heir*—and with them all those that are studious of perpetuating the honour of the *British* flag on the high seas; a thought surely that cannot enter any *Englishman's* breast, without wishes of it's perpetual continuance, or abhorrence of every cause of it's declension. But what
is

is the glory of their native country to such narrow souls, whose designs in life center only in themselves, and are contracted to the views of their own short existence alone ?

ALTHO' I have mentioned that incommunicated property of the Oak, as more assistant to such dominion, than any other tree, I shall not from the *reverie* of a *Druid* take up the time of the dispassionate that way, by entering here on a detail of such it's singular merits, or otherwise in the general : Nor would the most elaborate description of such it's superior excellencies, which I shall only partially take as they come in my way, prove any thing more affecting now, (after that part of my subject has been, according to custom, almost exhausted by Poets) than a trite description of a fine morning—the month of May—or a calm sea.—Altho' the similes of description are now become widely different between them, since nothing new remains to be said of either of the latter, and nothing to their essence can be added more by man, as to their natural beauty and dignity.

STILL

STILL neither of them therein is strictly the case here, if I make good my ensuing declarations; and as far as that endeavour of mine will be thought to alter that matter, and to raise new ideas of more general perfections of the Oak than before it naturally had; I accordingly pretend to have made so conformable a scrutiny into some prior unremedied ill *properties* of that otherwise most perfect plant; on the correspondency of many effects, whether *artful*, or *natural*, or *accidental* to their *efficients*—That by way of rectification, or remedy, my determinate propositions are not less, than by a new manner of *disbranching* and other means, to advance sapling Oaks, in our law books called *Standils*, and in the woodwards phrase, *Weavers*—the like sort that were left one fall of the wood before that, *Seconds*—and the higher fall above the latter, *Thirds*—namely such as were left *Standils* two distinct falls before; computing such intervals at about twelve, or fourteen years: Or elsewhere growing, of the like proportion, so they be not much older in growth, altho' as small in size.

To

To the beautiful, infrequent, and profitable heights of *Thirty—Forty* feet—and, *Upward*—one with another before their final head is admitted to begin. But hereby, as in part before intimated, is meant, such young Oaks as grow in our best wood-foils, or other such lands applied to their use. Still in those less propitious, ad valorem—Likewise of a proportionate diametral *magnitude*, or adæquate circumference to their distinct heights—Also, entirely clear on their bodies and void thereon, of any too early, or untimely *eruption* of their future main arms, while under discipline to the contrary—Or, without the disfiguring superfoetations of small *twigs* high, or low on their stems; so as to be of any continuance; on the adhibition of proper remedies, to such too frequent dispositions—The several mechanical expedients to be performed, without any injurious violence to nature—the performance easy—and the deriveable events certain—Further my design is, to shew on what malignant causes, Oaks ramify in, or on their bodies sooner and lower in *England* than on the continent:

C

And

And thereby become of much the less clear lengths and value—

I SHOULD likewise have said more than I propose on the article of *wood planting* ; but if I fail to describe the improveable nature of the Oak, and the great import of it at this time, so as to make it highly engaging ; then all other arguments I could use, would become useless—

BUT, having seen sufficient, even cogent occasion for it in divers parts of *England*, I have assumed the *Druidical* liberty, tho' not founded only upon the authorities of my predecessors, but from late rectified reason ; to urge some dissuasive arguments against the sufferance of young woods, or groves raised from the acorn, or otherwise, growing too long a time ; before, the most hopeful strip-lings, as from more promising excellence of their stamina vitæ, have attained a superior majesty to others ; are selected to enjoy wholly *by themselves*, the vegetating influences of free air—sun—rain—dews—and the inward succulence of the genial earth,—I would be understood to mean at larger distances from each other.

NOTWITH-

NOTWITHSTANDING this fulness of collected matter, as it so deservedly challenges a place ; I shall probably, by way of conclusion, add, according to my best endeavour, most of the political arguments pro and con on the present indiscriminate practice, in many parts of *England* of wood-grubbing : Which with a few, I hope, allowable digressions, together with the means of the reader's coming, if need, at the full conviction of the pretended success of the experiments to be mentioned, is, the present intended summary of this treatise—Unless a postscript should be added.

Now, as so general an altitudinal proportion of Oaks with clear bodies, and all other their desirable properties, attainable by artful means alone, is, in this age, most likely of all the articles I have mentioned, to subject me to a covert suspicion of my being therein *hyperbolical*, from a natural impetus, that many older writers have been found to be carried away with, in order to set their favourite propositions, as they thought, in the better light ; I shall therefore, before I enter on the culture of the minor offsprings of

X an acorn, first urge the reflection, as some may need it, that, nature on occasion has of herself alone, for ought is known to us, done much more of the kind intimated: Which is easily proveable out of Mr. *Evelyn's Sylva* from numberless instances—But to save time, and avoid as much as I can, being only an *Ecccho*; I shall mention but a single one; which is, of an Oak once growing near *Rivelyn*, that was eighteen yards in length without *bough*, or knot—

BUT whoever will give themselves the trouble of turning over that voluminous author, on that account, will, I think, wonder with me, that on an occasion so proper, so very curious and copious historian as he was, and moreover accounted so accurate a *Geoponic* writer; should give his countrymen no manner of light what probably might be the extraordinary cause, of such surprising procerity of theirs and clearness from all lateral ramuli on their bodies; and as to their magnitude, what he has intimated about the nature of the soil they grew in, makes it still the greater wonder. The clearing up either being a far more material information to us, than that there had been such trees

R .

in

in being ; at least had been a necessary adjunct to it. But altho' he has not left us that come after him, hopeless from the gift of *providence* of seeing some parallels of the like again ; yet if we employ our reason to come at what he thought would be a probable means of our like happy enjoyment after him, from the *imaginary* artful aid he gave to his young Oaks, we shall look thro' a false medium : For he unhappily practised not any thing of that kind, but what would mislead us—indeed mischief us—how happy soever he was in all his other undertakings.

BUT however incomplete his scheme of that kind was, still, to his credit, his aim was wisely *political* and *provident* ; in particular as to his apprehension of the future want there would be of such grand and aspiring Oaks in time to come. And so far the event has shewn the excellency of his foresight and judgment : By the present rise in value of such timbers, at *Woolwich*, *Chatham*, and other royal timber yards—By the *timber merchants* seeking and hunting after the like in inland counties—And also by the government and merchants being driven to

apply to *New England* for the like in shew, but very unlike in substance—This our navy board knows, altho' for good reasons, no proclamation is made of it to the *British* Oak proprietor. It is true there is but sparing use yet made of it in *royal* ships, saving under water where bullets cannot come ; yet therein it will do tolerably for channel service or for the mediterranean ; Not at all for duration in the west *Indies*, as it is so subject to the worm : But what multitudes of private merchant men have been wholly built of it at *New England* within thirty years past, and been brought up the river, and sold as merchandise ? Altho' a ship of *British* growth of ten years reign, as it is called, will outlast the best of them new. And as in those cases best, is best cheap, and as many of his Majesty's very respectable subjects lives are *dependant* thereon, the same is every way a national injury.

BUT I have not room here to pursue the consequences, and therefore proceed to say, that the wonder is not great, at the monstrous consumption of that truly *Colossean* and *Pyramid* high species of Oaks, if we consider how much the royal fleet and our
India

India trade, has been encreased within fifty years past, as also that long since our *Indiamen* have equall'd the middle size of our men of war—And again, whatever wise laws we owe to our *Ancestors*, that there never was so much as an intended encouraging one, since our *Edw. III.* to preserve an affluence of this *tutelar* plant of *Great Britain* and its dominions—As to the shadow of a penal law, made by *Henry VIII.* and perhaps meant to such purposes; it seems to have been ill concerted at first; and to be sure has been ineffectual; and for good reasons may possibly hereafter, be shewn to have been unjust—At least is thought so now by many, since the circumstances of the case are so very much altered since his time—

BUT again my business at present being only to open the cause; I shall omit descanting on either parliamentary scheme of that kind, till I find myself readier and more prepared to enter on most of the arguments pro and con, about the article of woodgrubbing; and only here on that case put the question—What would any new restraining statute, to the like import, avail? whereby

one neighbour is expected to turn informer against another—And as several men of good fortunes have joined their hands in the slaughter of very good woodlands (I cannot say for altogether mistaken reasons) their equals, for no reward, will not, and their *inferiors* dare not take the law, as it is called, against them—

As that is in good part the present, and will also most probably be the future case on any legal compulsion to a greater preservation of this plant, and as few parliamentary laws have premiums annexed to the observers of them : Application can only be made, or will best be made to some *happier expedient*, that will yield a more effectual sanction to such a restraint, than what a scepter by way of punishment can give.

AND what can that better be, to come at least from a private hand, than by making the same evidently by other means, the *interest* of the wood proprietor himself?—To which end, what more likely expedient can any way be found, than one, which by contributing to make the altitudinal proportion of Oaks, with their proper appurtenances, a
double

double clear length they ordinarily grow to, advances their value a full third? indeed much more—Which may be thus understood, namely, Oaks full sixty, or seventy feet in length, including their capital spires, whence issue their arms; which contain each above a single load, but the more, the better; and the main bodies of them clear from ramifications great, or small forty foot long, or more; will fetch at least one third more price than any much *shorter coarser* trees of like measurement; either for the use of the Shipwright, Carpenter, Cooper, Lath, or Pale render: The truth of which computation, I think no body will go about to deny.

How then, to train up young Oaks *clear* in bodies as a warlike spear; far more in number infinitely, than would be otherwise; and which from accidents hereafter named, would even in good soils be frequently the shorter and more knotty therein; so as to arrive at the second best lengths mentioned; and again the yet more thrifty and naturally aspiring of themselves, to the very highest of all; is, the business in chief of the two, or three next ensuing chapters to evidence first by reason,

By

By natural, I desire mostly to be understood, the common or ordinary growth of the Oak.

It remains only in order to induce all wood proprietors of this kind, to the ensuing practice, to urge the recommendation of it, that it takes them disengaged from any other pleasure, or business of the season : For when all gentleman-like diversions rural, or city pro tempore are ceased ; as when nor operas—nor plays—nor masquerades—nor fox-hunting—nor hare—nor the all murdering piece—nor setting net come in competition—when even wine is needful only to kill the time, not warm the chilling blood—the season for the ensuing enterprise comes in to fill up such vacations. *Fortunate Interlude !*

LASTLY, these gardens of the Deity's own making, as an ingenious foreigner calls naturally planted woods, yield to the workers in them after this manner, most agreeable views adapted to every stage of life ; for if the passions of human nature are not altered since the great Latin poet's time, the old

old man's heart is gladden'd with the after prospect of some favourite Oak of his then rearing up,

—*seris factura nepotibus umbram.*

The young gentleman that embarks in these operations as soon as he is of age, or a little after, on plants but twenty, or twenty five feet high, from the ground to their summits, and growing in tender—succulent—unctuous soils—in case he lives to sixty years himself, has the never dying pleasure all that while, to find them encreasing to, and at last encreased to the better half, between thirty and forty feet high, clear in body to their first boughs : Altho' it must be treble and quadruple his own age, that gives them their finished magnitude : But hence in the interim results a new joy, *viz.* That such an agreeable transfiguration of his Oaks from what they otherwise would have been, will, superior to the common endearments of hereditary possessions of the like, engage his affections ; as having a kind of new existence owing to himself by such singular modification ; and will leave a more pleasing as well as more lasting memorial of him to his

X

his posterity, than the scuts of so many hares, or the skins of so many foxes.

I PRESUME therefore I have, on all accounts, a just occasion to renew the advice to the gentlemen in particular last spoken of, given to the like, by *Pet. Bellonius*, in his *Neglectâ stirpium culturâ* :

“ Agite, O Adolescentes, et antequam Canities vobis obrepât ; Stirpes jam alueritis, quæ vobis, cum insigni utilitate, delectationem etiam adferent.”

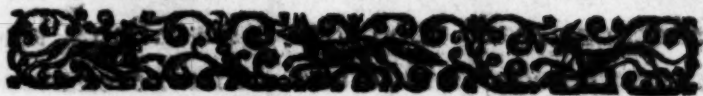
I HOPE it is from the influence also, the aforesaid considerations offer'd by me have upon such a Reader ; that he thinks me too long before I proceed on the practical parts.

BUT if any Gentleman's passion has been cooled this way, because as it must be owned, that Oak timber does not yet bear a Price proportioned to the real scarcity of it—his affections thereto may reasonably be doubled, if he is the happy man I wish him ; upon the reflection, that when such Proprietors have sold off their Stock, who have

have been reduced thereto from the great reductions made upon their other Estates, by Taxes thereon, and divers other necessities of life, or from the fruits of their own luxurious living; that is, to be plain, when neither the Lords of the Admiralty, or the great Merchants, and their agents the Timber buyers, no longer have it in their power to take advantage of the remaining Timber sellers.—And how notoriously this was the case of the necessitous Sellers thereof, after the fall of Southsea Stock, is needless for me to say—But, too many like exigences, tho' from different causes, are yet remaining. Yet when the Tables come to be turned, and the needy Sellers have done selling—and the other will not part with any but what it is good husbandry to take down, which will not near answer the demands of the Buyers—then such necessitated Buyers must lie at the mercy of the then Proprietors—And this in all cases of marketable commodities, is no more than what happens every day in life.

AMONG other things, having done with what credenda are at present needful; I proceed next on different Heads, mixt with some agenda.

C H A P.



CHAPTER II.

NOW before I enter on the *specific* education, that I have to recommend of the young princes of the woods alluded to; I think it a necessary preliminary thereto, to disclose what former discipline has miscarried, and wherefore, in order to advance the general comelier aspect—more longitudinal extension—and more useful forms of their bodies in time to come—

I SHOULD have avoided calling in question again, the name of so truly worthy a gentleman, as Mr. *Evelyn*, were it not that he was one of the most enterprising, and withal creditable naturalist that way, of his time; and therefore also that the sum and substance of the opinions of his most knowing cotemporaries, may be collected out of his writings, on almost all vegetable subjects. And indeed the same whether on the *Green house*, or the *Meloniere*, the *Garden*,

den, or the *Orchat*, or the *Wood*, contain so many, and so considerable improvements, that he has left us little other employment, than to correct a few of his oversights. But when *wise* men err, they commonly greatly err. The error of his fall'n to my share to challenge, from the unaccountable silence thereon, of all sylvatick writers since his time, I must call a dormant, or latent one: Yet the bare finding fault, without offering ways and means of its reformation, would never alone have become an agreeable province to me against him. Thus, the first method he took was, to equip his *arborator* (as he not improperly calls him) with a *hook—handbill—hatchet—saw—broad chisel* and *mallet*, to destroy thereby, the first tier of boughs of any young Oak, in order to encrease its future beautiful altitude.

AND there is good reason to think, this was not his practice singly, in the period of time he lived in, and perhaps long before; it being plain by his writings, that he imbibed his notions of the efficacy of those instruments to the purposes mentioned, from one Mr. *Lawson*, a preceding and with him, favourite sylvan Author. This appears

appears from his recapitulating those maxims which he in a tract of his, some time before published, in relation to forests and woods—"All ages by rules and experience, do consent to a pruning and *lopping* of trees; and if a tree declines from the end we desire it should not, that man may, nay must correct it by art." By which this very authoritative Mr. *Lawson* must necessarily mean Oaks; they being the general growth of woods and forests. It appears likewise in another part of that author, what led him into that mal-practice, *viz.* the docility he had observed in *Elms*, *Asps*, and *Hollies*; to which he might have added the wild *Cherry* tree and many others, little or nothing ramified in their bodies, by such lateral amputations: Yet as unlike to the *Oak* in that particular, as to conquered nations; that fail not to revenge the insolence of tyrannical invasion and arbitrary force, by frequent rebellions.

MR. *Evelyn* notwithstanding, becoming a second to this good old man, (as he called him) and forgetting the motto of the learned society he was a member of—"Nullius in verba"—set out in his *Sylva*, to demonstrate
the

the reasonableness of this Mr. *Lawson's* notions, which were now become his own ; and in order thereto, so far advances very rightly, in saying, " every diminution is a " reinvigoration of a plant's juice, seldom " otherwise arriving to their full altitude : " Again—" it is certain that trees governed " by this method, will encrease their value " more, in ten or twelve years, than such " as are neglected in forty." A large computation to be thence made ! still to these notions he accommodated his practice.

By this, and likewise by other circumstances, it appears that both of them had fallen into the very same misconduct, that my Lord *Bacon* accuses a greater man than either of them, *viz. Aristotle*, who, says he, " did not use and employ experiments, for " the erecting of his theories, but having " arbitrarily pitched his theories, his manner was to force experience to suffragate " and yield countenance to his precarious " propositions."—But to demonstrate their supposed reasonableness of such philosophy, neither of these two good old men referred their readers to any *visible* instances of their successes of that kind of practice on the

Oak ; and I am apprehensive neither of them lived two years out to see the event of it. And as it has been said, *Homer* had not been so considerable a *Poet*, had he been a copyist of others labours ; so I may say Mr. *Evelyn* had not been so bad a *Naturalist*, had he not by copying again in as bad a manner, as after Mr. *Lawson* for precedents, alighted on one less parallel than elms, poplars, or hollies, for his justification of Oak bough-*lopping* ; by unhappily misapplying some verses of *Virgil* in *Georgic* 2d, which accordingly he quotes for his authority ; viz.

———*tunc stringe comas, tunc brachia tonde,*
(Ante reformidant ferrum) tunc denique dura
Exerce imperia, et ramos compesce fluentes.

The verses immediately preceding these, being

Inde ubi jam validis amplexæ stirpibus ulmos
Exierint —————

The Poet meaning *vites*.

OR if that was not his misconstruction, it was still as great a mistake, to found general
maxims

maxims on particular cases. Which however if taken either way, is the less to be wondered at in this ingenious countryman of ours, as so great a foreigner and withal vegetable naturalist, and of a nation fam'd for their correctness in all treatises of that kind, has fall'n into the like misapplication, seemingly of the beforementioned verses; I mean *Rapin*; I know not otherwise how to account for his poetry, than as a paraphrase, or transposition only of *Virgil's* words; thus englished by Mr. *Gardiner*.

Soon as in strength advancing ev'ry year,
 The trees on deeper roots their bodies rear,
 The swain no proud exuberance allows,
 But wisely prunes the too luxuriant boughs,
 Lest with unequal weight the trunk should
 bend,
 And all the sap in useless branches spend,
 Thus early *lopt*, while tender yet and young,
 They rise from earth more obstinate and
 strong.

And this he inculcates under the article of
Groves.

THERE is, and ever was a latent tyranny in the single injunctions of great men;

and tho' this may not wholly silence any distrust, it stops a long while the opposition of inferiors, to their opinions. And hereto I was the more enslaved, as Mr. *Evelyn* not confining himself wholly to his dictates, fell upon arguments of different kinds, that, if possible, some one might hold good ; but deducible all the while out of general maxims of his own, and rules of pruning : Whereupon he goes on and says ; " Nothing " can be more necessary in order to pruning, than the knowledge and nature of " the course of the sap, which not being " universally agreed on, does lead our arborators into many errors and mistakes : " But how promissory soever, this declaration seemed, of his going about to instruct them right, he presently after shifts off his readers to be better informed by our Dr. *Grew*, *Malpighius*, and Monsieur de la *Quintinye*. And I only blame him that he did not add ; but you will at last find they can tell you little more of this difficult matter than I can myself. Which at the expence and loss of time, upon my looking into their works, I found true.

BEING

BEING then my self no adept, I was unwilling to go on my own little experience ; and as yet not qualified directly to approve, or reject a practice recommended by so great a triumvirate as *Rapin*, *Evelyn*, and *Lawson*, I gave my self up implicitly to the guidance of such leaders ; more especially on account of the vogue Mr. *Evelyn*'s works at that time of day had ; as part of the same were wrote under the suffrages of the *Royal Society*, and some at the instigation of the *Commissioners* of the *Navy*. So not dreading an ignis fatuus to light me onward, to work I went to perform the *Execution*, *Purgation*, *Coercision*, and *Recision* (for that was the form of scholarly writing in his time) of the under branches of some young Oaks, the height of whose bodies I was desirous to advance, by the immediate help of the instruments recommended. But tho' gay were my expectations, and highly pleasing my hopes ; yet I found sufficient reason not to repeat those trials above two seasons ; as so many ramusculi like *Hydra*'s heads sprung out thereupon, near the several amputations.

IF it were material to evince my further diligent inquiries therein, I should also say, that I consulted likewise Mr. *Lewenboek*, a great naturalist in those affairs; yet found not one kind *Ariadne* to help me out of the labyrinth I was got into. But that dark and gloomy, was turned into a lively prospect of my being thence extricated, by virtue of a treatise which a little while after fell into my hands, wrote by Mr. *Cook*, a solid and sensible writer, and a gardiner to the then *Earl of Essex*; upon the right ordering of forest trees, among many other articles. Who thinking Mr. *Evelyn's* method of pruning Oaks to be faulty only in point of *time*, became thereupon very sanguine, that by an early summer pruning of the boughs, that is, after the rapid flow of the sap in the spring had spent it's self in full blown leaves; the remainder issuing up the body would not recoil so, as ever after to make any effectual effort to a ramification little, or much near the parts dismembered. Instead of which, on my reading his book carefully, I found, to my mortification, by his own confession, that he was in the end proposed mistaken. For altho' he

he perceived no sudden ramous superfoetation any time the following summer, upon his kind of amputations; yet in autumn had he carefully inspected, he might have perceived many little buds peeping out of the bark for a further protrusion the *next* year; As consequently in the ensuing spring he found to his cost they did. But his industrious hand not sparing for any pains, to gain credit to such a thought, and new operation of his own, did at length from year to year, discharge such trees of their *multitudes* of little germens; probably by some like instruments as mentioned by Mr. *Evelyn*; so long I suppose as their heads were grown again to such an amount larger, as the quantity of boughs cut off, might be computed at: Whereby their summits were in a condition to receive all the sap which their roots were able to send up. Yet I should say only, in a better condition.

BUT *Hercules's* cleaning the *Augean* stable, or any other like achievements of his, might not have proved a greater labour, than clearing the bodies of three or four thousand vigorous Oaks, on such an occasion, of their germinations. I confess be-

ing then young, and not void of the conceit that frequently attends those of my age, I hoped to be capable of making some superstructure on Mr. *Cook's* notions, that might stand ; but all to no purpose. The shining fallacy strait as a meteor disappearing. The miscarriages of these two latter very ingenious adventurers herein, with my self, thro' them, and I doubt not, I might say of a hundred more, sufficiently shew what abhorrence nature had to every bold invader of her dominions of that kind ; and that she would as it were revenge such insults, and elude the desired effects of such violence. My continued observance of which producing the reflection, that tho' vegetating matter has not a self determining power as man, who is endued with free agency ; yet that in some nice cases in the Honourable Mr. *Boyle's* language, it is adiaphorous, and impassive to the ends of such secondary motion, which upon a vain presumption of our superior powers we attempt to give it, And that from some prior—latent—inherent—motion and energy (of what I may call here) it's own,

I SHOULD

I SHOULD be glad upon this occasion not to renew the remembrance of my want then of a readier apprehension to attain what I desired ; did I not imagine a formal narrative of my so slow a progress, might the better ground some particular persons in the succeeding practice. The foregoing bad success therefore, kept me (if I may so call it) in great awe, and laid an embargo on that confidence in my future better fortune, which my forward zeal might otherwise have possessed me with ; and I rested from all further action of that kind for several years. Thus three quarters vanquished, yet wholly loth to yield my self victim to despair : I in the interval neglected not entirely, reflecting what possibly might be the *physical* cause of our disappointments. And considering I could lose no great credit if I failed again, and that I might lose the less, I kept my designs as much as I could to my self private as could be, or where known : Yet that, success would justify the most unpromising presumption ; I kept my inclination alive, for some further trials, when better reason should invite me. But I had to my cost already found, that there was no direct

direct road to the knowledge of what I wanted, from any the greatest author, and that it was no way again to be attained by living preceptors, tho' it might *haply* from some lucky and favouring inferences and deductions, from something that had the fortunate appearance of a parallel illustration.

BUT however tardy the advances were that I made, considering what a great share of thought my application had engrossed ; I was thence set something forward again by my falling casually into a way of thinking, but, long since made familiar to the world, *viz.* That, the sap of a plant in summer more especially, in every part of it, both within the earth and without, does ascend ordinarily upward, with no unlike motion, as the spirituous fume does in a *still*, or *limbeck* set to work by the force of artificial fire : That (for the different intentions of nature) the most volatile parts of the lymph ascend to the upper parts of the tree—And the more fluid portion thereof is converted into leaves—while what is thinner yet than such, is absorbed by solar attraction, into the circumambient air—And what is not quite so subtle, or tenuous as to be either
way

way so appropriated, but is a little more corpuscular, is formed into wood branches—And the yet more inspissated parts, and thereby the slower to ascend, do adhere to the outer coats of the body, main arms, and roots—And in most trees become agglutinated thereto in the form and shape, of a solid ring of wood.

BUILDING on which foundation, and having also collected some further materials of observation, out of Sir *Kenelm Digby's* treatise of *Bodies*; I continued to trace, tho' with a snail's motion, the natural causes of the effects alluded to, on bough-*lopping*. And first what required not the least ingenuity to discover, but only the chance of so easy a way of canvassing the case, was, the reflection every way so very obvious; That——on a precipitate amputation of the branches of an Oak, the accustomed current of the ascending sap is unexpectedly (if I may so call it) to the tree, stopt, and in a very abrupt manner in such parts—And the same being got pretty high therein, to serve the occasions of the wonted call for it, and likewise on it's obstruction, being unable to return to the roots again by reason
of

of the supervening afflux of more ; which now must be called a redundancy—And the whole having neither leisure nor power, sufficient to extend the capillary vessels above for an adæquate reception, which were as full as they could hold before—my head, which was nothing so full of sense, still began to conclude, that under so great necessitous distress and as it were teeming labour of the sap, so great might reasonably be the elastic power thereof, and so violent the force of the rarified air therein ; that like as an impetuous current that is stopt in one place breaks out in another ; so likewise the sap in that case must and will find *new* vents ; which commonly prove to be lateral ; and throw out there, under the direction of nature, in some parts single germens, and in others so copious, as to resemble a *Virgultum* ; whose future subsistence upon an estimate would be found equivalent to the boughs cut off. This necessity of nature on a further reflection appeared the more evident to me, that, if this did not happen on such arbitrary *loppings*, the case would still be the worse with such tree—For either thereupon, by an occasional strong rarefaction and ebullition of the sap, and the
parts

parts of it's body being cessible longitudinally, it would burst open, which woodwards call scoaking—Or otherwise upon a stagnation (which would equal the analogous event of the stagnation of blood in animals) would ensue instant death. A case which frequently happens to old pollards, where the bark is too thick to admit of the kinds of ramifications I wanted so much to guard against. But yet I had gained nothing by these reflections, excepting that our manner of process had been too violent. For still to discover, at least to prevent the mischief thereupon, and how to find out the right salutary manner of *disbranching* an *Oak*; I was yet as much at a loss, as those that go groping in the twilight only of reason.

I HAD, it is true, the great example of Sir *Francis Bacon* in my case, to enter on some new experiment or other, and perceived how many fair hints were to be collected from his *Centuries*, for my manner; as also the encouragement how many truths before hidden he had unveiled to future ages; and likewise to my comfort, that even he, attributed his successes more to his *assiduity*,

fiduity, than his own personal ingenuity. Still I could not but regret, that the plant alluded to, instead of some others, had not been the primary object of some of his experiments.

BUT in his time there was no scarcity of all valuable dimensions of such timber, and little surmise of a necessity of laying up in store ; as the architect or shipwright could every where then, find what they thought proper to make use of. Which probably was the reason, that no number of naturalists then, or in times immediately following, set about any researches of this kind, or if any discoveries relating to a just culture of the Oak, were made by any such, they were thrown into their graves with them, and might thence be placed among
 + *Pancirollus's* lost arts of antiquity. Indeed all experimental knowledge in reference to vegetation in general, that was out of the common road, was then, and for some time after in it's infancy. Of late indeed it is most agreeably to be observed that in respect to some other particular objects of vegetation ; that many besides whose immediate profession it is, both *Gentlemen*, and
Clergy,

Clergy, as they have had leifure and an appropriate genius, have joined their researches therein, and withal have not envied the publick the knowledge of their ingenious discoveries.

STILL any successful attempts about the culture of this just pride of the *Britannick Isle* have at least remained unpublished; and the neglected Oaken minor has been left to the *Tuition* of rustic hinds and woodwards, or what is better, to none at all. Therefore without danger of being thought arrogant in thinking my self their superior; as I knew all the shelves and sands on which they had been stranded; I kept still on, reasoning with my self; that, I ought in some very *mild* and *gentle* manner to pursue what I desired; as that dame nature, like a coy nymph, might possibly be gained by soft addresses, altho' she would be forced by none. Pursuant to this, I thought it my business not to make my advances to her, as one superior in rude strength alone; but obsequiously to watch each passion in her, to follow her thro' all her secret windings and turnings, and to order all my motions, and caresses to her, in conformity to her
own

own general motions. And what obviously occurred to my observations thereon, were the *gradual* transitions, nature usually makes from one thing to another; whether it be in ascension, or declension. To instance in the slow growth, or declination of Beings, whether animate or inanimate; likewise in many other of her operations; as in the rise and fall of the year; her soft gradation from day, to night, and *vice versa*. And in many other instances, how slow her pace, and how deliberate her steps; for as yet I was got no higher.

BUT that my steps may not be thought much too deliberate in the description of my humble imitation of her; the spring after I was established in the foregoing principles; A time when the wood born warblers with their music fail not to welcome in, the proprietors of their verdant *Orchestra's*: I then projected in a wood, to destroy, kill, or mortify the untimely, or too early issuing forth of the underboughs, seemingly destined for everlasting arms, of some sapling Oaks; by what, I know not how better to express it, than by a lingering—consumptive—abolition of the said boughs; in order
by

by a very dilatory mortification to them, to occasion an almost *imperceptible* loss to their parent.—

As I had ever esteemed *Virgil* a Georgic philosopher, whose maxims were worthy of attention in the utmost latitude, I thought fit much to vary one to my purpose, and run the hazard of a transapplication thereof, if I may not be censured for the expression; which was

———*teneris consuescere multum est.*

For altho' dire necessity and poverty of invention obliges me on occasion to borrow; I am above stealing a thought. It is moreover sure, I had not understanding enough, according to Mr. *Lock*, to judge whether my reflex ideas were true, or false; yet fondly presumed, what the glimmering light of my reason could not help me to, the knowledge of, fortune might; and to which nobody had more right.

ACCORDINGLY the desired issue, with success however, if not with likelihood; I hit upon by a partial *decorticating* the said

E

under-

underboughs in the manner shortly following. But I think it will not be amiss to relate first, that the properest season for that operation, is that part of the spring when the *bark*, as the phrase is, runs well; and it is to be observed, that the sap in young Oaks, will not usually run so soon as in old; and in the former, I often find it will run till midsummer, and even till harvest after a shower of rain, and not infrequently at michaelmas, if the season be warm and showery. Which length of time, will be of great use to those who have many, and are disposed to subject them to this discipline.

 I AM now come to say, that it is at either of such times my practice is, to take off the bark of the boughs, I intend to destroy, close to the body of the tree, if any thing closer on the *underside* of the boughs than the upper, the reason of which will soon be found by an observing *debarker*. To perform which rightly, the bark of every said bough close to the body of the tree should be cut thorough, with a knife somewhat hooking, to the very wood quite round, in the first place: next another circular cut must be made at a distance in proportion

portion to the *size* of each bough, and the bark taken off, by making a right lined slit between the two circular cuts; which by the pressure of the thumb will readily reave off. The measure of the lengths the several boughs are to be *debarked* (altho' I never confined my self to a mathematical exactness therein, being—Such as are about the bigness of a man's forefinger, or a little smaller, two inches and a half; that is, to be as plain as I am able, I take off the bark two inches and a half long upon that end of the bough next the tree, in manner aforesaid.—Such again as are of the size of the ordinary handle of a whip; the bark must be taken off something longer—And such as are of the bigness of a pitchfork shaft, or stale, four inches at least in length: Beyond which proportion of the bigness of boughs, I do not frequently attempt to destroy any. Which practice tho' I do not recommend, yet neither do I deny, but it may be safely done, and where even the amputation of a *large* arm of an Oak (so it be at that time in a growing state,) is necessary for the convenience of some *vista*, or otherwise, I hope to be able to propose expedients, whereby there will very little damage, if any, accrue

therefrom. Before I proceed further, it is proper to notify one relative to the operation more, and that is, that whatever very small boughs, or twigs there are immediately under, or over the boughs *debarked*, they should not be meddled with that season, at least but in part; but of which more hereafter, with fuller directions.

To relate next, the especial consequences of the before mentioned operation; the very smallest of the *debarked* boughs, usually die the beginning of the second year, and some of them shew their mortality nearly approaching the first—Those as big as the handle of a whip die in course a little after—And those as big as the handle of a pitchfork, sometimes live, yet but rarely, to the third year. I say indeed live, but in no time latterward, do any of them usually vegetate, so as to encrease in bigness, or length; but are able only to throw out leaves from buds before formed, and those not full blown. But no certain period of their perishing can be assigned. For as the *summers* following prove moist, or dry, warm, or cold, and as they stand more or less exposed to sun, or drying winds, they die

die sooner, or later : But care must be taken that the bark runs well, for if any part thereof is left on the wood branches ; in case they should not need a second operation the year following, such at least will be a long while languishing before they totally die.

SUCH has been the general event of such trees, and such seasons and years, as I have practised in : But if they in other cases prove various—As likewise the soils—some little difference in the issue, there probably may be.

I PROCEED to clear up and illustrate, as well as I am able, some further consequences hereto, visible, and to offer a solution of some phænomena intended to be mentioned : But my practical being more than my literate knowledge, I shall not magisterially assert any thing is, or must be so, for the reasons I give, and cannot be otherwise : But that it is reasonable to me, the fact was so occasioned. And wherein I apply to outward evidence, it shall be where there is the least likelihood of the fallacy of sense : Yet withal I take upon me to affirm

E 3

again,

again, that the facts are true, to which my allegations, or solutions are applied, let the latter be never so defective.

THE first of the kind mentioned that comes in course, is that of a *bark-ring*; not any of those mentioned by that most ingenious and Reverend, Dr. *Hales* in his vegetable *Statics*; neither cited at least for the like purpose, nor as I take it occasioned from the same cause. This I allude to, being of more material consequence to the *debarker*: The same here meant being formed by nature, continuous to the body of the tree, at the extremity of the bough *debarked*; which, as I take it, is so formed by the following means—The portion of sap that usually ascended between the bark and the body of the tree, by corresponding pipes into the bough, before it was *debarked*, being on the aforesaid operation stopt, does, by reason of such obstruction, employ it self to form a protuberant circle of bark, close and adjoining to the body of such tree. See Figure of the Tree. And herein may be observed no unlike operation, to what nature practises in cases of wounds in animals: For the sap by which this ring is formed,

serves

serves the *debarker's* purpose, as well as if it had been naturally sent to his aid, only as a balsam to heal the outward wound he had made, (in what I may call thro' the skin of the tree) The said ring being thereto, ready and pressing to *close up* the same, against such time, as the bough being entirely dead, is found proper to be sawn, or cut off close thereto. By this means free liberty is then given to the inner sides of the *bark-ring* to cover the patent part: Which coverture will be effected in near half the time, that the like wound would have been on a hasty amputation, by *hook—handbill—&c.*

My next discursory account is, of what ensues, or becomes of the remaining redundancy of sap, which was not employed in the formation of that *bark-ring*, and which was restrained from pursuing it's wonted free course into it's bough, before it was *debarked*. Now part of it, with great rapidity is conjoined to the nearest sap ascending up the body into the upper boughs not *debarked*; as may be seen by their subsequent extraordinary vigour; and some small portion will yet find a passage thro' the inner pores

of the daily perishing *debarked* boughs ; till at last the same by the sun and drying winds, being rendered impervious to more in the parts *debarked*, the death of the whole said boughs, ensues.

BUT were such *instantly* to perish upon the before cited operation ; the consequence would be as bad to the tree with regard to ramous eruptions, as a sudden *lopping* off the boughs ; which fails not to occasion them in the body : The physical causes of which I have before largely exemplified. Still lest some redundancy of sap, and wanton superfluity thereof, should remain unexpended in the manner mentioned, or otherwise ; and as an addition to such overplus, nature in very hot and moist weather should send up from her earthly storehouse, such an unusual quantity more, as to endanger a forcible production of lateral germinations ; I fail not at the same time, that I do *debark* any boughs, to *slit* with the point of a strong knife the bark of the body of the Oakling both above the *debarkation*, and far below it, in three or four equal divisions. And this *incisive* expedient creates a designed discharge, and substitute employment of such

↓

overplus

overplus sap, in the outward expansion of the body of the tree; by enlarging the outermost ring of solid wood, and likewise giving a freer evaporation of some ill consequences that might instantly ensue from it's most volatile parts: So that all is quiet within—too great rarefaction staid—strong ebullitions cooled—their common effects prevented—And nature is doing the *debarker's* business, at the same time it is doing it's own.

I HOPE my regard to some persons at first alluded to, will be accepted by others, as a sufficient apology, both here and elsewhere, for the protracted manner of delivering my observations; as likewise for the diversifying in the form, now and then, some expressions; from the consciousness of my own insufficiency to convey my ideas intelligibly to any at once.

It was indeed partly from a like, tho' different operation widely, which a philosopher would call translatitious terms, that I fell upon *bark-lancing*. The same being occasioned by my reflection on the practice of many *physicians* and *surgeons* causing a
revulsion,

revulsion, upon an untimely eruption of blood, or pustulous humour in human bodies; in order to put a stop to such unnatural extravasations. Altho' I was sensible this kind of revulsory expedient would not instantly take effect. Yet I was conscious before any mischief would ensue, it would prevent the acuminate corpuscles of the Sap (on account of the great horizontal impetus of the pent air in the body of an Oak, strengthened on *debarkation*, by the diminution of the wonted channels within) from *boring* thro' the bark, as so many *spiculæ*, in the germens original form of buds.

OF all the powers of art over nature, neither Mr. Boyle, nor any other naturalist, that I know of, has mentioned the following; which tho' not a perfect parallel, I crave leave to recite—The instance is, of the power of art to translate even the aliment of an animal to a different part of it's body, from where nature otherwise would have directed it. An example whereof is taken from the mechanical *Jockies*, who, when they have a horse in keeping up for a market, that is either flat ribb'd, or poorly gaskoign'd, or has any other part of his body

impro-

improportioned,—can by girding to a great degree such creatures bellies, and by an uncommon friction upon the defective part, thence attain a greater accretion of flesh therein. Divers more instances might be brought from other parts of nature to strengthen this argument. But I let the same conclusively rest here, from the strength it has acquired from what has been mentioned: Craving only leave to insert two sentences out of *Cicero*, in reference to art and artists.—

“ *Artium aliud ejusmodi genus est, ut tantummodo animo rem cernat, aliud ut moliatur aliquid et faciat.*”

The other is—“ *Artis maxime proprium est, creare et gignere.*”

BUT I shall not trust to similes of my own, or the axioms of others, to support the credit of so essential a means to recommend and prove the success of this grand assistant—*bark-slitting*, to *debarking*: Which will both remedy the expansive force of the polar particles of the sap in the body of a young Oak, from getting an unnatural vent thro’

thro' the transverse defiles of the bark, opposite to the horizontal vessels in the main wood—And also promote the greater increase of latitudinal wood, or in other words, a larger circumference of the bodies of such trees—

I HOPE by this time, it is needless for me to avow it to be my earnest endeavour to familiarise the least shew of difficulty to *all sorts* of agents; that as my pretended doings are not dreams, so their disclosure may not be darkness. Of which however what writer can be assured? Too many more experienced pens than mine, having but darkly exprest that to others, which was possibly clear to themselves in conception, and that upon no very uncommon subjects. A man's own written words, however ill chosen, may likely reflect the same internal images in his mind, when read again at so great a distance of time that the former were forgotten. But he cannot be sure, let them be never so apposite, that the same characters will convey altogether as *homogeneous* ideas to others. And the matter is still more improbable, where any number of words are above the understanding
of

of particular readers. Which having, notwithstanding my general intention otherwise, possibly been lately the case herein ; that I may before I conclude this Chapter, leave none of the lowest, or least apprehensive agents, whose willing attention I have had thus far, in the dark ; by reason of a few past *philosophical* terms ; I think I shall sufficiently evince a compleat performance of giving them a suitable construction of the causes of lateral germens on the body of an Oak, by shewing—That if they know the effect of compressed air in a defective tobacco pipe, from their stopping one end of the same, and blowing with their mouth at the other, (and the better if their own saliva were mixt with it) they may attain a competent conception of the former similar cause.

EVEN an old woman now a days, whom we will not suppose to be as knowing, as an antient female *Druid*, might be thought in this particular case ; has a proper notion, in her way, of the effects of compressed air on the like occasion, and even of it's like impulse, in whatsoever body, or from whatsoever cause it came to be compressed ; and

as

as she untaught any reason, but from custom only does prick with a needle, or pin, an apple intended to be roasted, or a sausage to be fried, to give the juice of the former, or the liquified fat of the latter vent, in gentle exudations: Were she taught, that solar fire has no unlike effect on the sap of an Oak, altho' a dissimilar effort; she would not be long in conceiving the cause of lateral germens, thro' their natural pinholes.

I SHOULD, but for the reasons given, ask pardon of the learned for the lowness of the comparisons.





CHAPTER III.

THE state and also intended manner of my proceeding being before intimated, it will not be improper to mention an experiment, to corroborate a very material article advanced in the foregoing Chapter: That I may leave no scruples behind unobviated; which otherwise may be brought in evidence of my weakness—instead of my displaying the wisdom of nature—Wherefore I attempted to make proof *statically*, whether those very Oaks last mentioned, by means of having had their *bark-split* on bough *debarking*; did grow the more in their circumference, and latitudinal girth than otherwise they would have done. To be rightly assured of which, I fixt upon six young Oaks of an equal size and, as near as I possibly could, age: All which I girt the same day, to a mathematical exactness, with a linnen unstretching cord, which sempstresses call *Bobbin*. The ends of which being overlaid each other, were held in that position

position by a servant, till I crossed the same with a pen and ink; my self driving in a small nail, at that instant, a sufficient way into the bark, right under the part so crossed, that I might know exactly where to make the like girt again, with the same string, when I should think proper to make proof, how much more the *bark-slit* Oaks were grown in their circumference, than those which were not. Note, the said girting was about six feet from the ground.

THE event of which experiment at one year's end, happily was this—That two of them that were *bark-slit*, were grown more in content of the ground, than two others that were not: And between one which was so slit, and another not, I found but very little difference; this I impute to some better inner stratas of earth, the unslit one had met with; because on further like essays, the slit had ever the advantage. Still any like *Mechanitian* when about to reconnoitre such difference, must avoid being led incuriously into the delusion of thinking, that every such tree, is precisely at all times so much grown in the round, as the whole content of the several fissures when put together,

gether, (caused by the flitting of the bark) amounted to—especially if the operation was made in hot weather. For I have found on the proof before mentioned in some further like experiments, that the real circular growth amounted to sometimes more, sometimes less, than the whole of such chasms : And that tho' the *bark-flitting* was or was not made in hot weather, and such a difference otherwise, might probably be occasioned, by an unequal adstriction, or suppleness of the bark of such Oaks ; it being reasonable to suppose that in the latter case, it will not always rend open, like a cord or piece of cloth that is strained, so readily as in the former—The circumferential girt being nine times in ten extraordinary on such an occasion, is a sufficient proof of a revulsion of that sap thereto, which for want of being so usefully diverted would probably have occasioned lateral germens. To this I am likewise on experience able to add, that altho' *bark-flitting*, tho' never so abundantly administered, rarely happens to destroy germens already grown, without other means ; yet it seldom fails to make them weak and sickly—The flitting by me commonly practised on *bough-debarking* in

content of it's length and other proportion, has often been ten feet, but mostly longer, in three or four pretty equal divisions on the body of every Oak, even sometimes twenty feet.

YET is no such trees altitudinal growth, by means of such their greater horizontal, obstructed. As the boughs demolished from time to time yield the sap before employed to their subsistence only ; to throw out their tops, as usual, to a greater height annually.

HAVING spoken of some artful means to promote the circumferential growth of the bodies of Oaks, by the annual addition of a new outer ring of wood ; I am come to offer my reasons, by what particular channels within, the same is in a great measure promoted ; tho' it may prove my unhappiness to differ therein, from some present great naturalists ; who attribute the like to the upright vessels mostly. But which I take to proceed from the trachœus insertions in the body of an Oak formed like a *radius* from the center to the outermost parts laterally ; described by Dr. Grew, by the help of a microscope ; a draught of which is here exhibited,

exhibited, and I think is proved from the following experiments—I *debarked* the very bodies of two Oaks in *May*, one of which was as big as my wrist, the other less, nine inches in length each, close to the ground; fixing thereon a bandage of wetted paper and straw over that. The *Michaelmas* after, a new bark being formed, and the main wood fresh underneath, I thought it further very material to instance the success of this experiment, in order to strengthen many following propositions: Whereas it is very conclusive from hence, that nature makes use of such insertions for the yearly encrease of wood, as well as bark in her regular process. And that she may not be diverted therefrom by lateral germens; by flitting the bark longitudinally (whereby it's adstriction is lessened) a physical liberty is again restored to her customary powers. Further, if the Oaks annual rings of new outer wood are form'd in good part, from the inner *horizontal* vessels, as hence, I have found the bark is wholly; it is good reason to conclude, that at such times when the bark is so cohæring and so closely compress'd to the body, as not to be pliant and yielding to the formation of every new infant ring—

The sap thereupon shifts it's otherwise destin'd employment, and seeks, and flies to the crowd of little port holes next adjacent in the bark, in order for ligneous productions of another kind—And even where such co-hæſion of the bark is not over great; by what means ſoever the elastic airy flatus in the ſap becomes over violent, it may alſo be driven to the unnatural uſing of the aforeſaid means. But more of this in the ſequel. For it follows firſt I ſhould ſubjoin to a topic before mentioned, that in regard to the number of boughs at firſt trial, to be *debarked*, great care is to be taken not to exceed therein; and it is no leſs proper to intermit two years at leaſt, before ſuch further attempt is made on the ſame trees. Tho' no doubt improvements may be made on my practice, it may not be improper to intimate, that I never exceeded three boughs in number the firſt operation—nor *debarked* any more on the ſame trees, till the third ſpring after—at which time alſo, I never made freer than to *debark* two more—for what cauſe may be readily apprehended, at leaſt will be readily found, on any young operator's overdoing: After which I moſtly reſt three years, before I debark any *higher* boughs,

boughs, or arms. But of the precise number of boughs to be at any time *debarked*, as their forms, conditions, and sizes are different ; I think no invariable rules can be laid down, and defined : Time and practice will be the best instructors ; the ingenious agent will soon attain that knowledge, and the stupid never. I hope I have said enough to instruct the former, and never so much will be sufficient for the latter.

A FURTHER prescription is not unworthy of attention, namely—That it is not proper to *debark* all boughs as they came in order of growth ; but to take the strongest first, leaving some smaller, (as in part before intimated) that grow between, above, or below the larger, that they may for a time continue to relieve the tree of it's thenceforward encreasing store of sap ; which will naturally ensue upon *debarking* the larger boughs. Nor do I always take off such small ones as were for that reason left, even at the next *debarking* season ; but many times leave some of them on longer, to arrest the ascending sap in order to the enlargement of the body of the tree : Which otherwise might become too slender for it's height ; and

therefore I do not put them all into a perishing state, till I find proper cause on that account. A little observation herein, better than any written rules, will instruct the adventurer. The time being come, the largest of these quondam small ones are to be destroyed by debarking; and the smaller, by the method which will be described in the next Chapter—I think fit, further to intimate, that I usually take occasion by some means or other, to destroy most of them during the vacancy of the aforesaid three years; as also such petits efforts of the like kind, which an intervening malevolent season may cause anew to protrude out of the body of an Oak. And that if I find an Oakling has two rival shoots at it's top in manner of a fork; I begin with one of them, neglecting for that season, one of the lower boughs in it's room.

HAVING mentioned the time, the instrument, and the manner by which this operation is to be performed; I am now about to relate ingenuously what disastrous seasons I have met with in making such trials. For as I have concealed nothing advantageous to the execution of these experiments, so nei-
ther

ther would I any disaster that may befall them. I never in truth met with more than two cold ones which much affected them. The latter of which happened in the year 1742. The winter preceding the same, being attended with sharp frosts, and the spring following with cold winds; without any kind warmth to invite the Oaks in the least to vegetate; the sap which by little and little got up at a few favourable times in the winter into their bodies (which on the least sunshine lies not wholly dormant) still lay without any material activity. And this was the case till near midsummer following: A little before which—Great rains and sunshine thereupon ensued, at which time the benumbed bodies and their boughs were such, as not to be able to contain the then aggregate of rarefied sap, and to receive therewith the vast affluence of more, which the moistened and warmed earth likewise had enabled the roots to send up. Whereupon such of my young Oaks, as had been *debarked*, being overcharged with a volatile lymph, threw out thereupon a *ramous* spray—

THIS casualty however proved not the least discouragement to me; as I found upon inspection, the like germinations, from the same cause, befel some other which before were clear in their bodies, and had undergone no *debarkation* of this kind. To account for which events more fully, I find it needful to corroborate my own way of thinking, by one of the *Halean* thermometrical experiments: In which altho' the Doctor forestalled me in the *Static* proof, he did not in the thought; as I ever entertained an opinion conformable thereto, *viz.*—that the heat of the earth pretty deep, is very near the *same*, both night and day, in the summer, or spring, either. As therefore this must be granted on so many accurate trials as he made; I need not many words to urge, that the sudden cold of an evening, or morning air, upon the setting in of an easterly, or north wind; together with an additional weight of the atmosphere in the night, must necessarily be the occasion of an almost total depression of the sap, from the head of any tree downward, which was not condens'd into wood. And whereas, as before suggested, the sap keep's on it's usual

usual ascent from the roots, by reason of the less changeable heat in the earth, at such casual times, the same must in meeting the upper in it's descent, either burst the tree, or proceed to a ramification in such parts of it's body as it can most readily ; either being but a natural effect of their opposition, or to use a modish word, *Contravention*.

AND thus a sudden cold, from a like contrast, by stopping a free perspiration, many times gives birth to cuticular eruptions in human bodies, like to ramifications thro' the bark of Oaks. But altho' it is not my business to shew all the analogous affections between animate and inanimate bodies ; I think it not impertinent to my design to instance such parallels, by reason that the diagnostic part of the maladies being shewn, the *Physical* remedies may be the more readily applied, especially as it will thereby appear, that the *Prescriber* is not fighting against nature ; but as a rational physician remedying those disorders in either constitution, which malevolent seasons, and other accidents had brought upon them.

I HOPE

I HOPE I may be excused, having so largely treated on some of these circumstantial, as likewise continuing so to do, as it was a maxim of the Honourable Mr. Boyle, "That there ought to be a recognition of all those ways which in any particular case, nature can be known to operate, in order to define thereupon determinate truth."

It comes next in place to subjoin the other disaster, incident after my *debarking*; and which I observed many years ago: After the Oaklings in the spring had shot out six inches at least: The extremities of which shoots, with the infant leaves, upon one night's sharp frost, turned as black as ink: Whence the like issue as in the former case ensued, *viz.* petty ramifications laterally.

AND such accidents as here mentioned, would have proved great evils indeed, could there have been found no safer expedient to take off the lower parts of such twigs, which were not absolutely perished by such a frost, than by *hook—hatchet*, &c. For the lower end of the ramusculi alluded to, being in a living

a living state, and too small to be *debarked*, required a better head-piece than mine to hit on an expedient, instantaneous—and certain—I tried several, and my first was after this manner; I procured a *Gimlet*, whose worm part was ground off, and the remaining part formed into the shape of a Joyner's goudge, and with as sharp an edge; my intention being to thrust the goudge part forcibly thro' the bark of the tree, first on the upper side, and next under the lower side of each shoot, in order to turn out the very radicle of such shoots therewith. And this expedient indeed fails not to put an end to their little lives: But withal I must observe, it is a slow operation, and will do execution only on the *smallest* twigs. Wherefore tho' in part it was effectual, yet on account of the tediousness of it, I laid it wholly aside, as Mr. *Homburg* the *Chemist* did his experiment for converting mercury into gold; because it would not quit cost.

ON which perplexing accounts, I must have left this whole affair very imperfect, had not, after the last insufficient effort, my ignorance again been the parent of the like successful presumption, as it had been in the begin-

beginning of this enterprife: And that even to a degree beyond what I expected, and as far as I could wish—Insomuch that now I am not the least discouraged, if after the destruction of the ramusculi before mentioned, some small protrusions of like kind do proceed; because their tender existences are very easily put an end to, by a subsequent practice. A full account of which I shall reserve for the next Chapter; that I may in the interim endeavour to prepare the way better to that, and some other propositions.

AND first if for the sake of carping, some of the sayings of the ancients are brought in objection to essays of this kind; as that nature is of her self most wise—Again, that nature always does what is best—Sentences, which owe their signification and strength to reserved meanings! Then why do we prune our vines, or graft the wilding fruit? Cicero at least understood those words in no opposite sense hereto, as he has said—

Natura nihil omni ex parte perfectum expoliivit.

Altho' I think our *Bishop of Cloyne* has more justly

justly determined that point in his *Siris* ; wherein he affirms, that “ natural productions are not all equally perfect.” Conformable therefore more to the matter of the two latter dogmatists, I have found cause to aver in the particular of *bark-lancing*, (which operation has mostly been thought useful, only on the bodies and boughs of unthrifty fruit trees,) that the same has a very kindly effect, judiciously performed, to the promoting a greater thrift than otherwise, on the most vigorous Oaks. And that such shew thereon, as much sign of gratulation, as a turgid carnation, or pickatee, on *slitting* their hose, or pod. But if in some happy productions of the Oak, the bark through a thinness and suppleness of it's contexture, is of it's self sufficiently yielding and extendible for the purposes of nature : Still *bark-lancing* is absolutely necessary on occasion of mortifying by *debarking* any of their boughs, to prevent the ill effects alluded to. It is likewise as necessary to be performed on all transplanted Oaks whatsoever, that are of any stature, and have stood any time, to relax the cohesion of the bark to the body, which necessarily ensues, from the smaller aliment that their roots for some years are capable,

capable, as before, to supply either body, or bark with.

FURTHER, no part of my subject affording so much room for conjecture, or speculation, as what I am now upon; therein being so many *via inviæ* to the senses: The same likewise affording many arguments for the necessity of the operations recommended; I am tempted to rely on the indulgence of the most knowing readers to grant me the favour of their attention, to a more especial breviary of that kind. I trust not, thro' vanity, to the authority of my continual leisure, long application, or natural bias to things of this nature, to lessen any man's freedom of judging; whether versed, or not, herein: Yet I cannot think so slightly of many of my notions, but something may be selected out of them by the mindful, that may be of future use: If not there will this good come of it, it will teach all others of my *Size*—to keep their ideas without *Static* proof to themselves. Still I hope not to proceed upon so airy a foundation, that no solid superstructure will stand upon it; it being my intent to go in strict search, first, of the more numerous causes
of

of lateral germens than yet insisted on, (and therefrom unitedly to advance another proposition I defer here speaking of.) In order to which former, it is apparent from all postulata relating to the effects of rarefied air in all mixed bodies, or to speak in the language of *naturalists*, as they are the passions of the same : That the rarefaction of the air therein proceeds from the influence of some portion of fire ; the same being indeed to be concluded from what has before been said : But I am come now more comprehensively to intimate, that fire in the opening, dilates the body of the air, and whatever is therewith joined *spherically* ; as in the bubbles of boiling water, and the same will continue so extended, more lastingly in liquors of a viscous constitution, as the sap of Oaks must be granted to be. Hence when liquids of any kind are rarefied to a great degree, and at the same time are contained in a vessel, whose parts are resistant to a *circumplexion* (if it makes me not guilty of verbal coinage) of the air within ; the weakest side thereof will break—I would not by the facts last urged, be thought to be disguising the prior knowledge of others, as

I

recently

recently my own * ; it being the application thereof I take singly to my self. Again, the obstruction of the sap's free extention *globularly* in the body of an Oak, caused by the smallness of the horizontal vessels, is an argument of the power, accruing virtually from such rarefaction, given in part to the tender fibres of all roots, to pierce the earth. And such powers of theirs may well be supposed to be the greater, when the sap in the body is not employed to the protrusion of lateral germens, which is a fresh reason by all possible means to procure their destruction. To the like cause surely, in good part at least, may not unreasonably be ascribed the sudden striking of the roots of an *Inlay*.

I WISH I were able to entertain the Oak proprietor with some intermediate affecting Comparison, or diverting Simile to so long an argument as I think this will prove, especially as I think it would well bear them both : But lest I should prejudice the case by

* Thus *Boerhaave* says, That one effect of Fire is *dilatation* (even) of all solid bodies, and particularly, that an Iron bar heated, *increases* in all its dimensions.

my own impotence in the execution, I dare not make the attempt—I hope therefore that he will be contented with the bare Virginity of the Argument, without any such portion, and placidly however, and without languor permit me to proceed and only say—That there are such inward contrasts and conflicts, active, or passive, and *quâquâ ver- sum* exertions of the sap, occasionally in the body of an Oak, caused by the air's rarefaction therein, as rarefaction is from some portion of fire: Were reason silent—Is obvious to the sense of hearing, on flitting the bark of it in a hot day, about the end of May, or June; and that to a degree of explosion, æquable to the audible hissing, when vent is given to a vessel of new ale, or any other fermenting liquors.

To take the force of the preceding arguments in a yet further light: Let it be considered, how great the almost ignited rarefaction, and thereupon horizontal ebullition of the grosser, as well as thinnest fluids must be, to break so strong a prison as the bark of a well grown Oak: The same from it's natural contexture being less apt to rend and extend lengthwise, than the solid wood. Nor

can the sun only outwardly, be supposed to be the prime instrument, in the causing such usual fissures and chasms therein; as the same are as great on the northside of an Oak, as on any other point; yet had not nature provided some like integument, to resist on occasion, too great a dilatation of the sap within the body laterally; and withal had not the horizontal trachæus insertions, or tubes within, been much smaller than the perpendicular; this lofty and proud vegetable would otherwise, by the means also, of the declining position of the sun in this our hemisphere (whereby the aid of his greater attraction would have been much assisting) have grown out very improporportionately in latitude.

FACTS, that are determinable by statics, on mathematical demonstration, have the happiness in one single instance to carry conviction. But since such as are defineable only, by a logician, and those more especially, whose truth is discernible simply by the fainter light of speculation, cannot have too various enforcings of that kind, to gain universal consent; I shall proceed in that manner to evince, that there may be many other

other adjunct causes of such lateral germens :
 As first—That the uncommon exhalations
 caused by an over-violent heat outwardly of
 the sun, may render the moisture in the
 leaves of an Oak, of as firm a composition
 as glue, and their little pores impervious to
 more influx of sap : or—That such parts may
 be so consolidated by honey-dews, by which
 a resistance being caused to a fresh accessi-
 on, and recruit of more tenuous liquids, the
 said mischievous consequences may ensue.

I WAS not at first intending to write, void
 of the apprehension, that where an effemi-
 nate life has attached a very low idea of the
 import of researches of this kind ; that I
 shall not escape being thought impertinent
 herein, and not to be wholly free from the
 charge of too nice prolixity by others, till
 they come to discern their full tendency ; till
 which I shall run further in trust for pardon
 with such, by enlarging on the like causes
 and effects. My consequential process where-
 on, being, my fuller reflections on the north-
 ern and eastern winds frequently breaking in
 on the bland *Zephyrs* of the spring, till pi-
 tying heaven unfixes the varying Scene ;
 whereon we fail not to find that a forcible

restraint is laid upon, what I may call perspiration in the tender extremities of the head of an Oak; when at the same time, it is salutary to the whole to have the natural *effluvia* thereof uninterrupted, or in other words, it's *atmosphere* not abridged. From whence why may it not be concluded, that the sap after several flattering invitations up into the bodies and boughs of Oaks in the winter, by starts of warm intervals, becomes greatly inspissated, and thereby unapt to return to the *statu quô* of it's prior liquidity? Because the most viscous, or ligneous parts of it, must thereby be much condensed, and not inclinable to be fluxible any more. And that surely must be the case, if piercing winds can dry, and as parching heat contract. If so, what can those suffering patients do? when settled, shining seasons come—Able even to nourish the orange and the citron grove? And instead of oriental blasts, the soft vegetating breath of heaven; perhaps seconded by a vernal ardour little inferior to a summer's sun. What? but discharge the tenuious plethora, that happens to be so, *quâ datâ portâ*, the natural passages being *pro hac vice*, *insufficient* voidures.

HAVING

HAVING mentioned a very short temporary ardour little inferior to a summer's sun, and the natural consequences on the case there instanced; I have lived to record (the case rightly considered) one in it's effects of that lasting kind, more than commonly equal to a summer's sun. The same happening in the Spring 1746, the very infrequent incident of which, being further this—That there not only fell not one shower of rain little, or much, during the whole month of May, and a few days also, the latter end of April, and a day, or two in June, in the parts I live: But the heat and constant sunshine was equal in either, during such term, to the greatest *Æstival*; some small intervals excepted; wherefore altho' before I had cause to mention only, two different manner of cold seasons as causes extraordinary of lateral germens on the bodies of Oaks before clear therefrom, or had been cleared thereof by art; yet was such singular season productive of the germens alluded to, more than either of the other recited. During which whole time also, as I carefully observed, and some days after the fall of rain; no Oak young, or old had made the least new shoots

at their extremities above ; consequently had no new channels to carry off the highly rarefied sap in the bodies : The leaves formed from the buds of the former year, not yielding a sufficient discharge for it.

WHY heat without rain upward, will not cause the heads of Oaks to vegetate in it's most natural manner ; altho' the earth and consequently their roots are never so full of moisture (as was the case then, there having been great rains before) is not my business here to ascertain. And it would be but of little use, as it cannot be beforehand prevented, to offer at reasons, why on such occasions the sap has a readier power to form even new buds in the bark of the body, and thereupon to vent it's self in lateral exertions farther, than at the head of the Oak, where there were buds ready formed to receive, and aid it onward : It being my proper employment only in that particular case to take them all off again, when they are formed.

BUT it concerns the proprietor to be informed, that he will find more such extravasations in dry, hot springs or summers, than in moist sultry ones. One reason of which,

which, among others, I take to be the *suppleness* at such time of the whole body of the bark yielding to the pressure of the general impulse of the sap within: Whereby it is not constrained to seek out such weak parts therein, where it may best vent it's self in manner aforesaid.

BUT I proceed to say—That such cold easterly winds sometimes leave behind them, another effectual means of the ill effects alluded to: But what we cannot with our own, nor perhaps could we with *Galileo's* eyes at first discover: These are minute Beings, latent before in the womb of nature (no new creation) but not discernible to the naked eye, till they come to be big enough not only to devour the Oak's tender buds, but infant leaves likewise—till winds or their own weight bring them to the ground, if not before fetched away by *Rooks* and *Crows*, who are greedy of them; or death otherwise bereaves them of their worthless lives. And of all the obstructions of this distressed plant's kindly revegetating and recovery; or that make an operator the more work about lateral germens; such vernal locusts (*Aurelias* the *Virtuosi* call them, as being of that

genus) are the worst. Nor need I be at any further study to illustrate this, than by one single parallel.

WHAT therefore I shall urge by way of allusion, is from the late ingenious art (when used on proper occasions of *Anti-vegetation*, viz. The desirable restraint, in that case, that is put upon the over-vigorous growth of the shoots of vines and divers wall-trees by a discreet pinching them off. Which has no unapposite resemblance, to the rough and ragged wounds, left on the remaining parts of the boughs of any trees, which have been browsed off, by cattle: whereby ensues so great an obstruction to the revegetation of such plants, that the vulgar opinion of countrymen is, that their bite is venomous.

I NEED go no further back for actual proof of such existencies and their effects than the spring 1743, when there were great numbers of well grown Oaks thought to be past all recovery thereby, and ever having leaves again. And this distemper, for so I think I may call it, was epidemical that season in *Suffolk* and *Essex*, save where the Oaks were extremely well defended from

such malignant blasts and their genuine offspring; and where the soil was very rich. Yet I do not apprehend the bare obstruction of the progressive part of the head of the tree alone, on such occasions, is to be considered, or the lateral germinations occasioned for want of the accustomed discharge of the already ascended sap, at it's natural rills. But that, as I take it, there is a real sympathick correspondence between the head of such plant and the roots, in like manner as between the roots and the head; as to their future customary efforts. In which latter case a *Green-house* gardiner will tell, by the head of a plant set in a tub, almost the instant that the roots thereof are got to the bottom and sides of such domicill. The like indeed is seen in many vegetables, in the decline of their heads in the open earth, from a sufferance of any kind in their roots. And were there not *vice versa* altho' not a like, yet some peculiar disaffection to the former vigorous faculties of the roots of a plant, after the pinching off it's upper extremities; a more fruit-bearing, and consequently more weak and moderate flow of Sap for the future, would not be the effect thereof as it always is. The reason is plain
—Why

—Why the injury to such trees is likewise but moderate, namely because there are always collateral capillary vessels elsewhere open, (such operations being usually performed at the latter end of May, when the trees are in full leaf;) But such discharges the Oak has not the least resort to, whose whole verdant head has been gnawed off, and consequently great discomposure to the future efforts of their roots must naturally ensue.

THE accurate Mr. Ray, in his wisdom of God in the Creation, instances the case of a great number of *Mulberry* trees, that entirely died by means of their leaves being gathered clean off, to feed silk worms. Whereupon may it not be supposed, that the sap in the roots of such grew first torpid, on the deprivation of their corresponding vents—afterward entirely stagnated and corrupted? Yet had not such mulberry trees totally died, is it not reasonable to presume, that the like sufferance in their head would have occasioned some invisible languid effort in their roots? But taking my leave of Eastern winds—Hot sudden vernal seasons—Long dry Summers—Robustan *Aurelias*, and all the

the before mentioned, supposed causes of lateral germens, arising mostly from a dis-tempered *Plethora* of Sap; I desist here from further speculations thereupon, but all which past, I hope have been very allowably urged, and in the main have the favour not to be thought immaterially; being however not unaware with what discreet coldness, because of the modern detection of many fallacious opinions formerly current in *physical* cases, that all knowing gentlemen give into conjectures of this kind.

YET to support some of the foregoing, I know not how any such would be able to gainsay the man, who should make an excursion so far into the regions of fancy and the wilds of reason, as to maintain, that—nature without the immediate influence of solar heat by a proper commixture of heterogeneous particles, drawn from the earth by the roots of an Oak, as salts—sulphur—oil—acids and other bodies for which *Chemists* never found a name; by a reciprocal opponency to each other, may at times raise a heat in the body of an Oak, and thereby cause an ebullition in it's fluids equal to the greatest warmth of the sun. The heat of
Bath

Bath water being now, by the most judicious, attributed to a like cause. And if that point is gained, such a kind of free-thinker may possibly require consent, that whatever will raise a heat in a plant will cause it to vegetate: Whence further he may possibly urge, that—from whatever cause the ascent of such fluids, or when ascended, to whatever occasional cause again a defluxion downward is owing, a foundation thereby may be laid for the origin of lateral germens.

FOR my own part, I stand in no need of borrowing any support from the like *metaphysical* thoughts, it being I hope to be reasonably concluded from many of the causes before mentioned alone; that the sap in the body of an Oak, from the common elasticity of the air, which is not long permanent therein, attains accidentally a diffusive motion every way, *viz.* of the propulsion of the roots into the hard earth—again not only of it's natural ascent upward, but also of an occasional deprefsure, as in the case of the *Jessamine*—and a like from a Spherical motion of an injurious lateral protrusion of germens, when either a defluxion downward, or an evolution upward is prevented by any obstructi-

obstructions—The frequency of which and wherefore, having I hope been satisfactorily illustrated.

I AM come, and not before high time, to intimate, it being the proposition meant at the beginning of these speculations, that if another great end, besides the efforts so often inculcated, has not been foreseen, of the disquisitions past ; I shall think much of my labour lost, if upon my first mentioning it, the affections aforesaid, are not allowed to be the *prime* causes of the usually thence too early issuing forth of the *lower boughs*, or *arms* of an Oak ; and keeping them in the like perpetual position. But I suspend the full determination thereof till I come to the head of the Oak's natural manner of growing in old *England*. As therewith is joined the full confirmation of the proposition last spoken of.

Now this being the elementary Chapter to that, and other things, I shall here beg leave, on account of some persons I keep in view, and whom I would not have by reason of other matters intervening, lose sight of the cause and necessity of the practice recommended ;

commended ; more fully, if possible, to remonstrate—That by reason of the several kinds of cold before instanced, the sap being something condensed ; the same by the laws of gravitation must descend from the head of a plant, and not meeting with impulse strong enough from the still ascending, to cause it to re-ascend into the deserted vessels above, and as fluids are always in motion and never idle, the same again, seeks an easy passage, first thro' the sinuous network of the consistent parts adjacent, then thro' the membranous rind, between the rough outer bark and the body ; next more easily yet, thro' the outer coat of the former by means of it's greater porosity, and instantly appears in *extra* bodily *Lilliputian* shoots. And this the rather, the body being lower, and consequently in a warmer position of air than the head.

AND hereupon, it may not be amiss further to observe, that were it not the nature of an Oak, as happily it is not, on all such occasions, instead of bodily germens, it would throw up traduces from it's roots.

LASTLY,

LASTLY, as on account of my self it may be needful ; I think proper to intimate to the lovers of a greater mixture of the *dulce*, with the *utile* on subjects of this kind ; the greater hardship lying upon a georgic *Prosaic* Writer on mechanical operations, than on a georgic *Poet* on the like. The former is often obliged to fall into the dullness of repetitions, where he thinks needful, before the reader has time to take his meaning ; and at all times is not to omit the least circumstance, as he is not confined to the measure of verse : And must thereby run the hazard of falling into futility, without the enlivening harmony of numbers, to palliate the flat particularities, and driness of his matter—But the *Poet*, where precepts begin to prove dry, or dull, will skip over them, after having first culled the flowers of things. Thus *Virgil*, on such tender occasions, stops short and cries,

—————*sat prata biberunt.*

And again—

Et jam tempus equum fumantia solve colla.

In like manner *Rapin* artfully excuses himself

self from the tediousness of delivering all little nice particulars, by his saying NOW, meaning before he wrote—

Art has so far improv'd on nature's store,
That scarce it self can add one beauty more.

STILL no sooner will such a languid Reader commence or Actor, or Spectator on this sylvan Theatre, but the melodious Symphonies of Birds—the soft modulations of tremulous Leaves—the inartful amours of cooing Turtles—and the young Woodward's intermission of his whistle to sing of *Fulvia's* radiant Eyes, will make him forget my disparity with the Poet, on account of my want of more harmonious terms and over plenty of dry matter.



C H A P.



CHAPTER IV.

I Have yet to offer in case of need, and in order to mitigate an irksome peregrination thro' this subject, that it is usual for travellers in paths but little beaten to think the ways tiresome and long. But such have the happiness to be able here, to take up in what part of the road they please; as also that every stage will grow easier and easier. For my own part, it is now not more from promise, than with pleasure, I am come to shew an easier manner of destroying the whole species of lateral germen, of suitable sizes, issuing often from, or on the bodies of Oaks, different from my first essay. And that favourite *Specific* is a *Contusion* of the same with a hammer, whereby I have had extraordinary success. What, beside the insufficiency of the former before mentioned, gave the first rise to this experiment, was the difficulty I found and the time it took in removing

H ladders,

Wooden

ladders, how light soever they were made, from one tree to another; as the young Oaks in course grew the higher in body, as well as head, on every destruction of their lower boughs: Whereas I found much more ease and expedition by the help of one single ladder, (as the other operation of the little goudges required two at least, if not three, according to the several heights of the germens,) to forward a young agent up the Oak, from the top of which he could begin climbing to any part thereof, with a short handled hammer, or saw in his girdle, and a knife in his pocket; either for *contusing* of germens—Or *debarking* of boughs—Or *sawing* the latter off, when dead—Or *slitting* the bark of the main body where needful—Such a person being very well able to hold himself on, with his two legs and one arm for either purpose: The sizes of the upper parts of such Oaks bodies, not being of too great diameter for his grasp: And enough of such climbers may be found in every county, well versed in destroying *Rooks* and *Crows* nests; altho' a little practice will make the most inexpert at first in climbing, artists therein, provided they are light nimble fellows.

It is to be noted that a *blacksmith's* smallest *hand-bammer*, (as it is called) is properest for the said performance; and that the effects of *contusion*, are very near alike to those of *debarking*; where the very wood of the germens is not entirely mashed, or broken into small slivers; which in the *larger* of that kind, as much as may be should be avoided. But as more instant death ensues thereon, tho' performed after the most judicious manner, than does on the *debarking* only of boughs; there is therefore the more instant occasion for *bark-slitting* the body of the Oak in form aforesaid; to give due vent to the violent agitation thence, of the sap of the Oak, not unlike to the effervescence of the blood on the dismembering a human body.

HAVING mentioned one only manner of *bark-slitting* the bodies of Oaks, viz. in long continued perpendicular flits from near the top to near the bottom, in three or four pretty equal distances; I think fit to mention in this place, a different form, and not the least unsightly, which I have practised with equal success, and which I think comes nearer nature in the figures of the fissures she her self makes in the bark; as here adjoining described. The said flits being short and many, and performed quite round each tree, in fashion which has no unapt resemblance to the figure exhibited: Altho' there is no need of a mathematical exactness.

HAVING also given the agent a general intimation of the manner—uses—and causes of his labour—and a sufficient knowledge of the physical effects of either *contusing—*

tusing—debarking—or bark-slitting the several parts of Oaks on proper occasions—It is high time that he be instructed which sort he will find the easiest and most governable Objects of his practice; and again which will require his greatest ingenuity and attendance to reform. To whom in the latter may not unjustly be applied, on the event, the translation of an *Arabian* proverb, viz,

*Exercens bene, ingenium, sin male
inepitudinem suam indicabit.*

FIRST then as neither kind have been sufficiently enlarged upon before; it should be observed, that the happiest sort and most complying Oaks with his designs, are those whose bark may be said to be comparatively smooth and white, or silver coloured and withal pretty thin; of which pliant constitution, not unfrequently those are, called *Seconds*, in good woodlands; as likewise commonly *Thirds*, of those falls near the intervals spoken of; and in all soils of a very homogeneous constitution, are to be found even many large trees. To those most excellent qualities, I might add that,

of but a moderate cloathing of moss, together with the invisible characteristic, and undistinguishable at sight, but from the ill consequences of the contrary ; that the bark of such be of a disunion (if I may so call it) with the adjoining wood, I mean not too closely adhærent, or contiguous to the body of the Oak, as before in part hinted,

IT is very certain that in all healthful Oaks, the construction of their nearest parts, by which I should rather say the tuberous parts between either, is such, as to be extendible, supple, and yielding to the crowd and pressure of the annual rings of wood, which nature forms on the outer circumference of such trees : With reserve still of a sufficient vacuity in the interstice between bark and wood, for such sap as is destined to ascend into the head. Again—in union with which aspiring sap, I must further add reception likewise in such vacuities for the sap extraordinary propelled thereinto occasionally, from the inward horizontal insertions, see Doctor *Grew's* Plate, Lastly—when ascended ; an adæquate employment thereof, without obstruction, in the head of the trees and leaves ; in order that

that from a fortuitous flood of the like succulence, a forcible protrusion is not made thro' the capillary cortical vessels, to the unhappy formation of the aforesaid *Dwarfish* germens laterally.

ALL which qualifications I take to be necessary to a regular proceeding of nature in this part of her province. And I look in the general upon all puny lateral productions on the bodies of Oaks, even the too early issuing forth of the main arms to be præternatural, or *invitâ naturâ*; in other words, that nature ordinarily proceeds not to the generation of germens in those parts, nor so frequently of too early and untimely arms in the Oak's minority, (in good woodsoils at least) but as she is one way or other forced thereto, by extraneous means. Another indication of the healthful state of young Oaks, is, that their upper boughs are very much erect, and even their lowermost inclining thereto; that is to say, not much pendant, or hanging downward, but tending more to an erect, than a horizontal position; especially when winter has freed them of the weight of their leaves; as like-

wise that in their own form they are strait and not over crooked, or curling.

YET may a young Oak have all the good qualities before mentioned, and still be incapable of ever becoming a large tree. As for example—where an Oakling is unhappily grown from an old stubb, or father's head, as woodmen call it, how vigorous soever the first efforts are; which indeed for a time are observed to be more so, than those which grow from single stubbs: Yet no sooner is the body and the head of the former grown to that content, that the old roots can carry them to; but both body and head stand still; by reason that the roots themselves are frequently so aged, as to have no further progressive motion: And this is the usual fate of the offspring of superannuated stubbs, whose growths have been cut down ten, or a dozen times, perhaps more, as *sylva cædua*; yet while their offspring is young are able to support it lustily.

Now I am entered on this head, it is not less proper, the unknowing agent should be informed what sort of Oaks are less promising

mising of being much assisted by him. They
 are first, such, (to suspend here a relation of
 all the causes) whose bark is ordinarily rug-
 ged, or deep furrowed—and black, or tend-
 ing thereto—whose last year's shoots, altho'
 a following wet season, are extremely short
 —and a further diagnostick of their insani-
 ty, is, that their bark adheres almost as
 closely to the outer ring of wood, and sticks
 thereon comparatively as fast, as a bullock's
 hide to the flesh—which is the reason that
 some of that sort will not run, as the phrase
 is, in barking time, at least not kindly. The
 store of sap collected in the whole winter,
 and foremost part of the spring, scarcely
 being sufficient to lubricate the parts alluded
 to, either for the convenient purposes of na-
 ture, or of man. Too many instances of
 this unhealthful sort are to be found among
 Oaks growing in weak soils, or even in
 good, when sprung from the old fathers
 heads before spoken of, yet may have ar-
 rived to the content from five, to ten feet,
 or more, and consequently whose first up-
 per tier of boughs are something above the
 sizes of what I have recommended to be
debarked; even before they arrive at their
 fatal stand,

WHICH

WHICH unfortunate trees moreover, instead of their having lateral germens here and there, shall sometimes be found to be extreamly full of them, and likewise perchance have on their sides, boughs big enough to be *debarked*: But in the main, are a kind of pigmy shoots that never encrease much in bulk, of whatsoever continuance they are; for if some occasionally die of themselves, which is frequently the case, others of *like sort* arise in their stead: But during the time of all the survivors growth, they lessen the aliment designed by nature for the head of their parent, and keep every part of the plant from any material encrease, at least much reduce it. And this is the state of all Oaks in a higher, or lower degree, as they have more, or less germens on their bodies. Yet altho' divers of these sorts are little likely to be made very fine trees by any art; still the condition of many of them is to be much bettered by those who grudge not a little trouble, as will be shewn in the sequel.

BUT in order to prevent the very beginnings of some of these calamities, as so proper

proper an occasion here offers, and if it would be thought agreeable to extend the limits of this dissertation to any collateral article, that may for time to come, reduce the number of many of the invalids mentioned, and greatly encrease the stock of the healthful objects of the agent's industry and the proprietor's gain; I should advise all owners of woods, studious of such an emolument, whether the *sylva cædua* is felled by themselves, or sold to others by the acre, that they trust not even their own woodfellers, much less theirs that buy the same for sale again, to set out at their discretion after their indeliberate and blundering manner, the proper stock of *standils*, or *weavers*, either in quantity, or quality. But if the matter is thought below the personal attendance of such owners, or at an incommensurable distance; that—they make choice of some judicious woodward, and the better to engage his care, to ascertain to him more than common wages, some time before an ax, or hatchet is that way employed, to traverse the wood intended to be felled, having with him a boy carrying a pot, or tin kettle of tar, soft grease, and foot stirred up together; in order with a brush to mark
around

around about a yard high, every such *weaver* as appears properest for the succeeding woodfellers to leave. And it is incredible how many acres two such may mark a sufficiency for in one day: Whereby if an entry of the number is made, it will be entirely out of the power of the woodfellers to blunder, or commit any waſt of that kind unknown; I call it very properly waſt, becauſe a fine *weaver* cut down injudiciously, and an ordinary one left in it's room, is a double waſt: Beſides it is well known what blunderbuſſes the common run of ſuch labourers are, as likewiſe that they are more attentive to make wages to themſelves, than careful to commit no waſt for their maſter's ſake. And if he who purchaſes the underwood in groſs, or by the acre, is not a man of uncommon probity, in caſe he gives no ſuch orders himſelf, his woodfellers will think they merit of him, by ſetting out a parcel of poor—ſmall—weak *weavers*, that the faggot wood, and cord wood, *alias* round wood, may riſe the better. Whereby many perſons of diſtinction have been great ſufferers, and thoſe moſt of all who employ *Stewards*, or *Bailiffs*, as many ſuch are greaſed in hand by the purchaſer.

THIS

THIS said I proceed to admonish the careful agent, whom I think on this occasion I may not improperly call the *Dresser* of the Oak, on it's careless and neglectful outer habit; that he may very safely *bark-slit* any such in the height of summer, as well as the spring, whose bark he is able to *slit* with a strong knife, at the same time he is *contusing* the germens.

BUT because the strongest knife in the strongest hands, will not be able to perform the like operation on some unthrifty Oaks of greater growth, much less on such as are still more in content of timber; he will find himself obliged to make use of a *Cooper's Ax*, not *Hatchet*, for that purpose. The use of which should not be too late in the spring: For if such performance happens in very hot weather, while the sap is in great agitation and the sun violent hot, the several slits thereby made will rend open, so as to expose the naked wood to wind and sun, which is to be learnt from what has before been said. But if the same is performed in mild weather in the spring, it is very agreeable to observe how the cutting

ting partially that stubborn ligature, will reinvigorate the whole tree, and call off the before destined germinal sap to the encrease of bodily wood: The germens at such time existing having been first *contused*. Nor can I help thinking, but the remotest roots of such trees, enjoy a sensible relief on the suppression being thereby taken off, from their sending up the aspiring fluids they had imbibed from the earth to their proper, but before obstructed ends.

NOTE, in this sort of *bark-slitting*, a mathematical exactness in strait lines from top to bottom of an Oak, is neither necessary, nor more useful, and if it resembles that form of knife *bark-slitting* represented at the beginning of this chapter, it will not be amiss. As also that such *Ax* be fashioned more like a meat *Cleaver*, but shorter. And if the agent has not a steady hand, the same should have two gages, *viz.* one at either end of the blade, if I may so call it, which will prevent thro' unsteadiness, his striking any end thereof into the very wood, by an unlevel chop; which as much as may be should be avoided. Likewise that a wet
and

and dripping season forwards very much this operation.

THIS brings to my recollection, that there are a sort of Oaks, which if not already grown too old, and consequently their bark too stubborn for the operation of the *Ax*, must in all reason, highly recompence the proprietor's trouble for the same; whether they have any ramusculi on their sides, or no: Such being those that are *pigtailed*, as the timber buyers phrase is; meaning, too much impropotion'd in their bodies above, to what the girt is below; whether the same has been occasioned by a greater contraction of the bark above, from drying winds, or sun or any other cause: But which expedient, if the former arguments, in favour of bark-slitting, be admitted, will conformably bring them, in time, to a more equal proportion in their upper parts to the lower; if the latter are at the same time omitted.

THERE are likewise Oaks which casually grow flat, meaning, not entirely circular in their bodies; which I apprehend to happen from the greater stiffness of cohesion of the

the bark to the wood on the too flat sides ; which may attain a relaxation and the like consequences therefrom by the same means. Neither of which events however have come within my own experience.

BUT I am able to urge in support of such opinion the event of an experiment, I made of late years, on some young trees not bigger than my wrist, which was the *slitting* their bark about four foot high from the ground six times in the whole round, and renewing the same in the interstices, alternate years, whereupon the bodies in such parts swell'd out extraordinary to any other of the same. But either case is to be attended to before it is gone too far.

AGAIN, in the latter two cases, the plenary effects are not likely to be attained, as nature therein must be waited on, from one single performance ; and therefore the same are not visibly to be expected till the force of two, or three operations are over, intermitting at least a year between each. But these things I mention rather as matters of Disquisition to the Curious.

IN reference to the pig-tailed Oaks; the mischief of their so growing, is very considerable to the proprietor. For the buyer will not accept them, without taking two girts, and often three, which is ordinarily a loss to the owner : For should the buyer accept them at one girt, it might be a loss to him, especially if they are to be converted at whole lengths, as he must then be obliged to waſt the lower to the ſize of the upper parts : Yet where ſuch Oaks are too far gone already, meaning where their bark is too ſtubborn for the operation, there is no more to be ſaid thereon ; but that the owners would, if at all, take thoſe in time which are not. But giving up all that are hopeleſs of remedy therein—as likewiſe all other Oaks whereon by reaſon of their age the uſe of the *Ax* on their bark is impracticable—or where otherwiſe the before mention'd ſeeming over much to do, is too formidable—I hope yet to make my advice welcome to all ſuch owners (as I have had therein ſo practical ſucceſs) for their *debarking* all boughs which have ſhot out of their ſides between the ground and the firſt large arm of their heads, and *contuſing* of germens,

if there be any ; which of either sort happen more frequently in pasture timber than in woods, (the said boughs not being bigger than the sizes I have advised to be *debarked*.) And it is surprising what an *eclaircissement* such a *dressing* as the destroying the capillary germens by *contusion*, and the larger by *debarking*, will give to all well grown Oaks ; over and above the additional value such operations bring. The timber proprietor otherwise sells, while the bodies are thereby in part obumbrated, what himself cannot clearly see beforehand the value of, and the buyer will hardly take the pains to shew him.

As it concerns me to be as little as may be begging the question only, when I am speaking of the advantages to the Oak attainable by the energy of such *contusions* ; I know not better where to introduce the correspondent instances, than here, that neither Fern—Tansey—Nettles—nor any other vegetables, if trodden on, or their heads by any other means much bruised, when in full sap, will throw out any more like trauduces from their roots, had they any other supplemental way, as *contused* germens have
to

to discharge the future resource of sap :
 Of which sort of plants it is again further
 to be remarked, that if their heads are cut
 off neatly by any instrument, they much
 readier shoot again from their roots, in like
 manner as germens when so treated by *hook*,
handbill, &c. Further—it is well known
 to the most ignorant husbandman how much
 more readily the grass grows when cut by
 sharp sithes, than when the like herbage
 has been trodden on, and battered with
 cattles teeth and feet.

AND again as to the latter manner of
bark-slitting, viz. that by the *Ax* ; I must
 acknowledge that there is much more trouble
 in the execution of that sort, than such
 as require only the operation of the knife,
 since there must be ordinarily two light lad-
 ders of different lengths to command the
 distinct heights of the bodies of the Oaks.
 But I have sufficiently experienced that gen-
 tlemen therefrom will find their account in
 all growing Oaks, of whatsoever size, where
 needful, and where it can be performed.
 And I persuade my self to make the credit
 of the usefulness of that operation so reason-
 able before I have done, that it needs not to

be taken on the authority of my own assurance only ; as also that I have already demonstrated the good effects of knife *bark-slitting* on young Oaks, that there needs no other arguments thereon than what have been given. I would have no man on superficial motives, make light of the benefits arising from *bark-slitting* in general, no more than from *contusion* : Because that great and strange effects often proceed from simple principles. Further—to instance one material effect of the former, not before mentioned ; I may appeal to an established expedient to make a young crooked tree, of any sort, grow strait ; namely by *slitting* the bark on the concave side, which it performs, as I conceive, by only the hollow being thereby filled up with additional wood.

BUT in reference to either of the performances, I should not omit to intimate, that such practices may not lie under disparagement for vain attempts ; that there are some Oaks so full beforehand in their bodies of such *minutiæ*, or continued cluster of superfoetations, that most will be tired with *dressing* them. Yet I have many times had the fortune, for experiment sake, to get
the

the better of such habitual indispositions, and restore their parent to a healthful state, by *contusing* all such germens the first year, and at the same time *slitting* the bark of the body also, in four equal parts from top to bottom, and renewing the same operation the second year, in the interstice between the former slits; as also by repeating the *contusion* of the newly sprung out germens; should any part of the body ramusculate the second year, and bring forth such illegitimate offsprings.

FOR where the vital parts are not very deficient—Or the understratas of earth are not much resistant to a further progress of a tree's roots—there need be no despondence of a cure, even where such germens are abundant—Altho' I had rather acknowledge my insufficiency than prove it, by pretending to give perfect diagnosticks where they are, or where they are not remediable: What I can give any man hopes of succeeding in, from my own experience, is, where there is no great defect in nature, in a stunted or unthrifty Oak, supposing it has much more in content than what is called timber—Where the soil is not so unfavour-

able as to restrain a free progression further of it's roots therein—Where either a stop has been put to his former thrift, by some unusual drought, which is many times the case in soils of the weaker sort—Or has been brought into as bad a state of involuntary inactivity, by being overtopped above—Or curbed underground in his roots, by some more masterly tree, while it stood—Or where the vernal *Aureliæ* before mentioned, had seemingly put it past all restitution. In all which hopeless cases, still it is admirable, what a restorative to it's pristine health, if ever it had any, the judicious use of the *Ax*, on the bark of it's body—and the *slitting* the same with a strong knife on it's main arms will prove—Together with the *contusion* of the lateral germens, when properly so universally *dressed*—

It must be enquired of those who are best able to drive the horses of the sun, as I am neither able by any *statics*, or strength of reason to shew, on so small motion as is given to an Oak by such contusion; How great a spring may be given to the permanent and fixed air therein—What elasticity thereupon, the fluids may attain—And what
dissolvency

dissolvency of the too strict ligature of the bark may ensue—Still were I to assert some degree of all, I know not who would be able to confute me.

BUT these secrets of nature lying out of my reach, I leave to those who are better able to support their opinions for, or against either; to pursue the relations of some further practical observations concerning the *contused* germens; as, that I usually cut them off, after they are entirely dead, to give leave to the little *ringlets* subsequently generated on the body to close up the wounds if they are any thing large. It is also material to be noted, that if all buds, altho' no bigger than a wheat kernel, are not at the same time *contused*, that they will germinate the year following, the more vigorously, for their *elder brothers* deaths: But consequently are not to be looked upon as new eruptions, in prejudice to this experiment, if omitted.

UPON the whole of the foregoing matter, I think my self fully authorised to maintain; That, from very long and unvariable observations on these united experiments;

The bodies of such Oaks are therefrom enlarged—Their further little bodily ramifyings mostly prevented—Their beauty much encreased—And, their value very greatly enhanced—

As to the complainants against me on any suppos'd, at first, difficulty in the performances, a little use will make the same easy—And as to such indolent and unenterprising owners, who care not to purchase or profit, or pleasure with any study about them—As likewise such who have but a slender taste this way—They need be little perplexed at the seeming intricacy and the multiplicity of the foregoing directions; when abstracted from my pretended solution of some phenomena, and reasons given for my various practices. All which such may lay aside and neither hurt themselves, nor me, so they pay but implicit obedience to the rules prescribed. Whereby their memory being disburthened they will have little occasion to complain of intricacy and variety. On whose account the rudiments having been as sparingly as possible, to be intelligible to them, laid down; I shall for the future, in respect to the education of this
great

great traveller on the *Main*, be studious to confine my self to themes less chargeable with perplexity, or likely to create any languor in them, from my deduction of several points from one general head: Begging pardon first of such as are præadvised of any intimations past, or to come, especially if they are so obvious as not to bear once the repeating. I am not insensible there are divers of the learned, among whom it would be ambition high enough in me to communicate in the whole to them, an *Anecdote*, or two of nature: For I pretend to give such no general information, but what the perspicuity of their own minds would have led them a directer way to, if they gave less application to other matters.

IN reference to whom I think however, it may bear commemorating, that all *debarked* boughs leave out sooner the spring after, than any other; as thence arises the admonition of a material sylvatick *æconomy*: The fact of their so leaving, if I remember right, Dr. *Hales* has mentioned in his vegetable *Statics*, and has likewise offered reasons for it, but without the like application—I take it for granted that no gentleman that is easy
in

in his fortunes, would without singular reasons, take down for his own use, or sale, thriving and trees of finished growths promiscuously. And the aforesaid observation will direct him to the knowledge what Oaks have done growing, or are least growing: As all apparent vigorous trees, are ever found the backwardest in *leaving out* in the spring; in like manner as the *undebarked* boughs to their associates: Provided they are of one and the same species—the same bigness—like soil—and on the like exposure—even let the genus arboreal be what it will, either fruit, or forester, the argument will hold good, whoever shall give themselves the trouble of a comparative measurement of the bodies of such Oaks with others: But they should take this caution with them, *viz.* to observe which had mast, or most mast that year; for in plenteous mast years, the timber grows but little, and in like manner fruit trees when much loaded.

My next proposition is, the safest means I know of, to prevent damage accruing necessarily to the body of an Oak at such part, as where any larger boughs than I have proposed, even *large* arms of timber trees
are

are to be taken off; on account of some vista, or otherwise. Wherefore in order to a salutary execution thereof, and to obviate the belief in some gentlemen of an inevitable decay at the long run, in the part of the body of the Oak next adjoining: I think it needful to observe, that no inference is to be made from such, as have suffered from arms dying casually, and have been suffered in a lingering manner to rot off: For in that case it seldom fails of proving very injurious to the body of the tree, by means of their breaking off, in a rough and ragged manner, and frequently thereby drawing out small *splinters* from the body it's self, and leaving a few tough *splinters* sticking out of the same. Which (tho' I think I might spare saying it) are of course part of the hearty remnant of the broken arm, or such parts of the body as the broken arm could not carry off with it: Which protuberances being left behind at the time of the fracture, not being soon corruptible, by their being mostly of the most enduring substance of the body, do long remain thereon a sort of *aqueducts*, by their posture of inclination to lead the rains in, to corrupt first, the sap-py part of the tree adjoining, and then by degrees,

degrees, the hearty ; as the alternate changes of wet and dry, will gradually waſt and conſume any ſubſtance leſs hard than a ſtone. And by ſuch time as theſe *aquæducts*, or prominences are themſelves periſhed and rotted off ; Nature then, and not before, and perhaps never with ſufficient power, ſets about a final cloſure of the wound. And the loſs cannot be computed till the tree is converted—Nor is the damage then to be computed barely from how much of the tree is thereby periſhed—But the ſale of the whole is loſt for the moſt valuable purpoſes,

As the truth of theſe obſervations is obvious to all but blind men, but not animadverted on by any ſylvatick writer, that I know of ; at leaſt no means propoſed of remedying the miſchiefs ariſing therefrom ; I think very little perſuaſion requiſite, as the remedy withal is ſo eaſy, to induce the proprietors of old timbers to prevent the ruin of many a fine Oak, in ſuffering ſuch breaches to lie open and expoſed. As there are no greater managers than many men of fortune, in all other parts of *Geoponics*.

NOR

NOR is the manner of taking off the large arms of timber trees, other than that of taking off smaller boughs. Accordingly in the first place, I would advise the *debarking* such arm, or arms at the proper season of the year, that is, when the bark runs well; if large, for eighteen inches in length, or near upon, from the main body; in which condition the same should remain for one year, and if two, the better; that a pretty large ring of bark might in that time be formed by nature contiguous to the body of the tree. At the end I will call it of two years, if there is no great hast, the same should be sawn off, avoiding a *hasty* fall, to prevent any *splinters* being drawn out of the body thereby: After which a chissel should follow the saw, not only to smooth the patent wood, but to hollow the edges inward next the *barkring*; which will the easier thereby dilate it's self and cover the wound. But it being not proper to leave the same exposed to the weather, tho' in a much better condition to shift alone against it, than the rough and ragged wounds before spoken of; it will be very needful to cover the patent part with an *emplastrum* made

1
+
made of equal quantities of hard tallow, bees wax and rosin melted and laid on warm with a brush in a dry day ; or whatever substitute the owner shall approve of. In like manner all boughs wrested off by high winds, or such as it is necessary to take off when dying, or dead should be treated.

2
THE *emplastrum* I on ordinary occasions generally use my self, on taking off the largest size of *debarked* boughs, (for the smaller require none) is made with the like materials, but withal tempered with oil, or pork lard, to the consistence and hardness only of butter ; which needs no melting, but may be spread over the patency with the thumb. And this practice alone I find keeps out the drying winds, as well as rain, which are equally as injurious as a drying sun : And would alike cause little *fissures* in the parts exposed, and dry up the natural moisture therein, which when dried up, nothing can restore again. And this kind of balsam is laid on with all the dispatch imaginable.

NEXT, to answer, if not to satisfy the needless scruples of any, that young Oaks of the

the fizes I have mentioned at the beginning of this treatise, by having their boughs so destroyed, suffer no damage thereupon ; as likewise that the latter Oaks spoken of receive no material sufferance on the occasional taking off a large arm in the manner prescribed, and the application of proper vulneraries, obliges me to give a definitive account, what becomes of the *knots* left in the bodies of Oaks, after the demolition of either boughs, or arms—The ingenious Dr. *Goddard* before any other author I have met with, had the penetration to call such *knots* by the symbolical name of *roots* ; And *roots* I think is every way a proper denomination of them ; the same not being continuous but contiguous parts only to the body of a tree ; as appears by their frequent falling out of sawn boards when exposed to wind and sun. Whence altho' the body jointly with the boughs of any plant, are but unitedly considered as one single tree : Still the main body thereof gives subsistence to many more virtual trees ; as every bough growing therefrom, is in strictness to be considered as a little tree ; more especially as the same does all the functions of a tree growing in the earth. Particularly by sending out divers shoots

shoots from such *roots*, when their head is cut off by *hook*, *handbill*, &c.—Further as a *root* in the earth jostles and removes by it's superior strength of extension, any adjoining strata's of earth, to make way for it's habitation and subsistence : So also do the other *roots* in their terra in the body of the tree, crowd—cross—and contravene the inward perpendicular sap tubes and horizontal interstices, and all other cessible parts of bodily wood, for their habitation and subsistence—

HAVING given the true characteristic, or proper name of such *knots*—declared the means of their preservation when their natural offspring is destroyed—shewn their similar powers with *roots* growing in the earth—And their parts distinct from the body of any Oak, great, or small—I am coming now to use very strong solicitations to gain credit, that such *roots* themselves in their new state (I must call it) alluded to, do not thereon naturally perish, if protected from the injuries of the outward elements by means of the balsam spoken of; like to what befalls all *roots*, or *knots* so exposed, whose quondam boughs have been destroyed
by

by chance. For tho' I did not admit them to be continuous parts of the body of the tree wherein they grow, but only contiguous ; yet are they virtually so, in reference to the former quality, as to receive after the demolition of their defunct produce, the ascended sap in the main body into them ; which it is plain they had the faculty of thence doing and from no other fountain, for the subsistence of their own progeny while living : And from what time soever there is no further call of sap from the body for it ; they transmit all the influx of aliment of that kind, therefrom, to the upper living boughs of the tree ; having a propensity thereto, from the natural suction, or attraction of the superior parts of the tree ; as also from the compulsive force of the ascending sap below : Saving such a portion thereof, as is called off to enlarge the circumferential growth of the principal body, by the easy access that is given thereto by the bark being slit near to adjoining.

THAT this *agere et pati*, this receiving and discharging again the sap received, is a faculty still belonging to such roots, not-

K

withstanding

withstanding the formation of their parts is composed of pores transverse, is evident from the practice and effects of grafting ; wherein the combined parts of stock and cyon, must be said to have as irregular an union, if not a more unnatural composition and heterogeneous corpuscles, than such *roots* with the body of the tree. If the stress lay upon the capacity of the fluids not having such a motion in their little intorted cavities therein ; an analogy might be brought from the constant circulation of the blood in the small winding Veins of all animals ; wherein it is allowed by *Malpighius* and others duly to circulate, altho' not so swiftly.

UPON the whole, having further shewn that these new named *roots* are not impervious to fluids, that is, necessarily die not —That they continue capable both of receiving and remitting the same again to the parts mentioned after any use thereof in their former cease—And consequently are thereby well enabled to perform (if I may so call them) all manner of animal functions—It is indubitable reason to conclude, that the great damages discoverable many
4 times

times in the working up of old timbers, are entirely owing to the neglect of the original owners, from their not timely applying such kind of remedies against the same, as have been prescribed. Inasmuch as all the injury that with any shadow of reason can be alledged to proceed from the *roots* of the highest sizes of boughs, I have recommended to be destroyed; is no more, than that the clear riving quality of such trees, for the use of the cooper, clapboard maker, lath and pale render, may in time to come be something injured, even to the content of the diameter of such *roots*: The which cannot be any thing considerable, as it is well known, that the clearest bodied Oaks that have otherwise so naturally grown, had once some boughs near, if not full as big, that casually perished in their youthful growing state, in their sides; either by their having been obumbrated and stifled for want of air, by the higher domineering boughs of the same—Or perchance by lateral adjoining boughs of other trees—Or by being within the reach of cattle, have by their browings undergone a lingering death—And yet after such fatal consequences, no apparent injuries of that kind have been com-

K 2

plained

plained of therefrom, by the future render or cleaver.

NOR is it at all difficult to account, why any such supposed damage should be nearly imperceptible, from such small and yet living *roots*: For no sooner are the outer parts of them covered by the *barkring* spoken of, and a new *parenchyma* compleatly formed, whereby an absolute closure is made to the once open parts: But nature proceeds thereunder in her accustomed manner, of forming new erect rectilineal sap tubes in the annual circumferential rings of new wood over such *roots*; in like manner, on occasion, cleavable as the clearest parts of such trees, and so closely united to the parts alluded to, as they become inseparable. And this with the utmost confidence I may assert; since not being willing on either accounts, to trust solely to the solid and substantial reasons that first led me to this practice; where demonstration might be had to confirm so material an hypothesis; I made no scruple to cut open, as soon as they were ready for the proof, with a chissel, several young Oaks, which were of least account to me, in such parts where the once apertures

tures spoken of, were by the new bark entirely closed up : And found thereupon, such inward parts in the salutary state desired.

I HOPE the reader who intends to be a practitioner this way, will not think I have mispent either his time, or my own, by being so long in endeavouring to clear up the foregoing points : As thereon the happy fruits of all our expectations and all our labours depend. But expectations on my own side, are now no more ; other than what are founded on my presumption of having obtained hereby, every reasonable man's assent to the preceding arguments : Whence I am the more emboldened, on account of the benefits attainable with so much ease and certainty by the like discipline on Oaks ; to urge the reflection, how welcome a scrivener, or broker would be to a monied nobleman, or wealthy commoner, that should put either in a way to make, tho' but one *per cent.* more of their cash securely, provided it should bring in interest upon interest.

TIMBER then being readily to be converted into money, may not improperly be looked upon as current Specie—And by this kind of brokerage will pay interest upon interest—As likewise advance such capital *ad valorem*—viz. for all the charge that by this practice will be brought upon it.

IT is now some years since, on these to me indubitable reasons, accompanied with ample demonstration of the conformable success of manifold experiments of this kind ; that I had then, some intention of tendering my service to his *Majesty* now on the throne, for the *Typical* execution of the like practice, in some of his forests : And new forest in *Hampshire*, more particularly ; wherein by this time, there cannot now be less than a hundred thousand young Oaks, which stand in need of such culture ; if the *Act* ordained in the late *King William's* time, for enclosing a vast quantity of acres therein, and instantly sowing the same with acorns, was well executed ; and afterward all cattle kept out.

BUT

BUT such employment now, is wide of my *desires*, and as much beyond my present ability as my *ambition*: Yet had it been otherwise, I know not what *Patron* to recommend me to his *Majesty*, I should have found at court: As it is their own height and grandeur every one aims at there, and among all the great number of *Placemen*, no *Intendant de Police* of that kind, or any like it: While *France* has hers, and even a *Marquiss du Quesne*: But *England* has nor *Garter'd Knight* nor *Marquiss* of it. As unmindful that, as by God's appointment, one of that family, had once prolong'd the life of a *British Sovereign*. But so fares it with the memory of Charles's *providential Oak*, unfigur'd by any lasting Emblem, and such its Fate, only lamented in these short liv'd Lines.





CHAPTER V.

I Should be guilty of an omission to the inadvertent, did I not intimate in favour of *tall* timbers; that more will stand on an acre, and do less injury to grass, grain or underwood, according as the places on which they grow happen to be; than large headed and low boughing trees do: And that the sap employing it's self more on the body of the lofty, they will be converted the less to firewood; that is to say, they will be the less in head; which bears no proportion in *value* to the content in body.

BUT what the real difference and inequality between them is, I believe, known to very few: Wherefore as I think it will prove no disagreeable digression, and as I am haply provided to give a just estimate therein; I shall run the hazard of the acceptableness of it.

I ONCE

I ONCE took down an elm, which to all outward appearance, while standing, was found inwardly as well as outwardly : But when fall'n, or fell'd, it proved what woodwards call doted, and to be fit only for the fire ; altho' without the least cavities, or hollownefs : The fame on an exact meafurement, amounting to forty feet only exclusive of the bark. I had the curiofity to make the experiment, what an exact load of any timber (computing forty feet to the load) was intrinfically worth for the fire only : I caufed thereupon the fame to be fawn into Stackwood lengths, *viz.* one yard and one inch, and instantly riven into billets, before any waft could be made by purloining : And the whole of it with the very bark, (over which as I faid it was not meafured) amounted to a fingle ftack only, of eight feet in length and five in height. Whereby it appears—That a ftack of firewood, in fuch parts where it fells for ten fhillings only ; when delivered to the buyer after the charge of Felling—Riving—and Carriage to any moderate diftance is deducted—amounts barely to two pence *per* foot, and not to that, where the fize of
stackwood

stackwood is customarily fourteen feet in length, and three feet and two inches in height.

THIS I think one strong inducement to the proprietor to use his art to employ the sap of an Oak, to the greater encrease of bodily lengths of timber, whereby the heads of such will be in their content the less, and consequently the tree of more value.

NOR are clear bodily lengths alone, by the means proposed ; but all, that lies in our power, by art, to advance the value of the Oak, when grown to perfection : As there remains yet another point of education of it when young, coefficient to that end ; and that is, by causing it to grow *bending* or *crooked*, for the use of the Shipwright— or on occasion the Architect—

Mr. *Yarrington*, in a treatise of his published many years since, speaks of an habitual practice about *Oldenburg* in *Germany* of that kind ; and that Oaks so disciplined and fit to be converted to their proper uses, were transported thence to the nearest rivers and floated down to *Holland* : But has not

as I remember described the manner of the original discipline. The like has formerly been, but most frequently unsuccessfully attempted in *England*; from a wrong manner of *bending* the heads of young Oaks to something that is stable, in order to confine them in that posture. The consequences of which have been, that after high winds such cords by chafeing thereon, have eat thro' the bark into the very wood: And where that has not happened; as nature in that kind of vegetation is prone to erectness; new perpendicular master shoots have proceeded out of the upper sides of the *bending* parts, and that so much the rather, as the ascending sap in such *bending* parts was somewhat restrained in it's progress by the constriction of the ligature: Which shoots when cut off according to old custom by *hook, handbill, &c.* have sent out near adjoining three or four, perhaps a dozen more in the room of each; Which has brought that obsolete practice so much the more into disuse.

ANOTHER like expedient of some of our progenitors has been, to tie a cord with a weight at the end of it, to some part of
their

their tops, which by fwinging about with every motion of wind has proved more detrimental than the former. For in the former case, their ill success was owing for want of a noose of proper leather about the head of the Oak, as I have found upon trial.

BUT might I be thought qualified to recommend a better time and safer method of that kind; I would advise those who have it in their power, and withal such long liv'd views for the good of posterity, to attempt the bending such only as are not bigger, or not much, than a man's thumb; and that so, as the bending part should be on the lower end of the plant, and so for ever to continue. Yet can this performance be only securely executed, where no traffick of cattle, or idle people come. But this is to be said in favour of a tree bent at the lower end, and not only that such operation is the readier to be performed, but that it is not, in that position, so likely to be riven by intense frost after a great fall of wet; which is an incident many times to trees crooked upwards and thereto exposed in their bend, so much the more.

THAT

+ seems to imply that strong
woods [141] were so bended
in Virgil's time.

THAT the experiment will succeed in
young trees of any kind, is evident from
Georgic the I. of Virgil, where he says,

*Continuè in silvis magna vi flexa domatur
In burim, et curvi formam accipit ulmus
aratri,*

I should likewise have spared mentioning
the success of such an experiment, were I
not prepared with an answer, if asked, what
encouragement I could urge for the trouble
that must be taken in such an enterprise :
And that is now found to be—If a tree is
bowed at one end only, (tho' if at both the
better) it is sufficient to entitle the timber
merchant, at the Navy board (and the ori-
ginal proprietor has a right to make the like
account to him) to a hundred foot *Meetings*,
as the phrase is, for every *bonâ fide*, eigh-
ty; being consequently a fifth more in value
than strait timber. There was indeed a
time, when, the allowance on that account
from the government was greater : But since
the invention of *crooking* ship timber by
fire; *natural* bent timber has been a falling
commodity. The improvements in the Ship
yards

1/5th

X

X /

yards is now likewise such, as to be well able to make good work with strait, where only knee timber was formerly used : Yet do not such builders pretend, that what is *artificially* crookt by fire, is equal in strength to what is so grown—I may call naturally, this way.

BUT as no body will be so hardy to say that our Ship-timber grows upon us, but it must be owned every sort of that kind grows still scarcer, more especially the most desirable knee timber : And whereas all possible means in this age, are sought after for the improvement of landed estates ; Why should not a practice of this nature be revived among such as have the opportunity ? especially as no doubt great amendments may be made to my theory ; I might say great enlargements to my practice thereon.

I HAVE not in this article nor in some other before been intendedly writing to persons who stand in need of annual returns of their time, and lands ; but such as wanting neither ability, nor disposition of their own to many of the foregoing mathemata ; yet have not happily fall'n upon the right knowledge

ledge to exercise either—Or some that have been disheartened by the miscarriages of others in the particulars mentioned—Or others that have been overruled by the diffidence of others from entering into projects, (as they may have been invidiously called) of this kind.

I AM coming next more largely to treat of a branch of culture of Oaks that are past the latter discipline: But are the very proper objects of that mentioned at the beginning, *viz.* young groves raised from the acorn, or otherways—Or in common woods—Or great wafts—not exceeding the sizes mentioned therein. Whereby I propose to make it evident, that many proprietors of such vegetable jewels, in order that they might avoid the errors of Messieurs *Lawson*, *Evelyn*, and *Cook*; are fall'n into another. For in order to advance such striplings in altitude they let them grow so *thick* and in such *clusters*, that their heads have nothing but the zenith of heaven to enjoy: Whence for want of elbow room, they chafe and gall each other; unless here and there some overmasterly plants, partly from a superior excellence from an acorn, and also in a good degree

degree from some kindlier understrata's of earth, usurp thereby a hastier horizontal extension of their heads over their fellows— In which state the whole are suffered mostly too long to grow, the too indulgent and otherwise happy owner, delighting his eyes with their encreasing procerity, and clearness of their bodies from ramifications, their side boughs in the general having been suffocated in a good measure, for the want of sun, rain, and air—Till at length the *starving* condition of many, which loudly bespeak their oppression, moves the otherwise helpless proprietor, to put such quite out of their pain; but perhaps not much more than by a decimation, by which the remainder for a short space have a little more breathing room—At which beginning few owners thin them sufficiently, but suffer too many to continue yet standing: Which flattering inducement usually proceeds from a view, that the remaining *Supernumeraries* may afterward turn to a better account than for the fire—As likewise that the near neighbourhood of the survivors may in a little time again stifle and suffocate each other's side boughs; in order to attain the otherwise justly desirable beauty of a yet higher altitude

altitude of their bodies ; such owners however overlooking their unæquable bigness many times to their height—In which fighting state of these combatants, it is found necessary again, after some time, by the too visible appearances of mutual damages to each other ; to proceed to another extirpation, by which time however their graceful and exemplary aspiring, (much pleasing but delusive View) is such, as to go to their heart to take many more down : But finding a general indulgence to be but cruelty, they are forced upon it—In the revolution perhaps of one seven years more, such proprietors become sufficiently convinced that Oaks like not fellowship like reeds : But the time being come, that they are to make a little better return of what require a further extirpation, than for the fire (for it must be called but a little) since fir timber of their size is so cheap, and so much better ; as no forester is worth less for mechanical uses, than Oak ; *ash*, and *elm*, from their first beginnings, being all heart, as the other is mostly sap, with a mixture often of *nolens volens*, they set about making another draught out ; and possibly such as are unexperienced, take down all the crooked ones to choose—

L

However

However that be, by this time, the standing plants, with the before, and possibly some yet remaining to be extirpated, have exhausted much of the spirit of the ground, which the plants designed at last, to bless and make happy, coming ages, were entitled to, and should much earlier have had, the *sole* propriety of. Whereby they have likewise invisibly undergone (But what the proprietors eyes do not see, their hearts do not grieve) great sufferance in their roots, from being restrained, by the opposition of their rivals below, from a more masterly exerting themselves in the earth; if not put to an entire stop; and thereby obliged to turn into a mat of small fibres—For where the bodies stand so thick above, it must be conceived, there must be contention in the roots *below*: And where-ever there is such opposition, they will meet with a stop to their progressive motion: A vital stop, and of all kinds, if rightly considered, the worst! For, what the stomach is to an animal, the roots are to a plant; nor do their organical parts underground only suffer; but their *bodies* too, by being so thick above: For the same are in the mean while thereby prevented of the nourishing succulence, they would otherwise

wife have imbibed from all gentle summer rains and dews; which their outward pores would have been capable of receiving had they stood thin. Much less can their roots have any benefit of the greatest summer rains; as what on such singular occasions, the upper parts of the trees do not drink up, the long coarse grass thereunder, will—And what a great account, is, further to be made of; their bodies in the mean while are debarred of a greater extension, from the rarefaction of the air within them, and the fermentation of their sap proceeding from solar heat; and consequently have every way essentially suffered in the *growing* period of their Being; and that, both above and under ground; whose periods of existence by a universal consent of naturalists, have been estimated to amount to near three pretty near equal stages: One growing, one standing still, or next to still, and another thoroughly decaying: Whereto I shall only urge the opinion of one great *Virtuoso*; and that is *Quintinye*; who in his treatise of agriculture thus says, “ Every
 “ plant has a determinate, certain and in-
 “ fallible stint, or term for it’s beginning
 “ and duration”—Let this argument be

taken again, in the light of animate Beings : And who has not observed in the latter, that after long indispositions, *deobstruent* to their growing crisis ; such hardly ever upon an alterative state, make away again tantamount to what they had been retarded in their early growth : No more will an Oak stretch it away, and in the end be every way well proportioned, when such his maladies are removed, and no other loss accrue to the owner, than what the ejected tenants at will, (by which I mean the extirpated plants) had been admitted to retard his growth in his minority : And that nature has a similar manner of process in all her works, is well known to the judicious—To bring the present case nearer a parallel ; admitting a pasture was overstockt with either *horse colts*, or *horned weanels* ; would either after a long confinement therein, and being kept to a short allowance of proper food, ever make equally as fine creatures in beauty, bulk, or stature ; altho' afterward never so plenteously kept, and fed ? Is it not an established maxim to let either have a belly full when young and growing ? fatal alike to future comeliness, height, and grandeur are all remoras to the as natural efforts of the
Oak,

Oak, at such period of it's Being—Nay were such plants on whom the inheritance of the soil, is at length to be entailed for life, miraculously to stand still (as the sun did for *Joshua*) during the existence of their ejected brethren, and that their vital course was not to be shorten'd thereby : That would not serve turn ; for in the meantime, the congenial vegetative spirit of the earth, with irreparable profusion would be exhausted, and the same cannot be too much laid to heart. What other is the occasion that timber in old woods is not ordinarily so large as those in pastures ? but that in the latter there are not so many *subterranean* robbers—To come yet, if possible, nearer the case : If there is no account to be made of the congenial vegetative spirit of the earth being immoderately exhausted thereby : Then all our most judicious gardeners are reproveable for taking out a good quantity of earth in gardens or orchards, where an old tree has died, or even a young one that has been of any continuance there ; to recruit as they properly call it, the same with virgin, or untry'd Earth ; before they put a new one therein, especially of the same species—And if the bodies of trees are not the more

cherished by an uninterrupted enjoyment of sun and air—of rain and fertile dews—even a free combination of every element—How come the bodies of such about *London* that are close box'd up, to protect them from idle passengers, not to grow in any proportion of bigness? in the same time, to those that are not—Another notorious advantageous influence of the sun in particular, on the manner of expediting the growth of the Oak, is such that it is justly matter of surprise, the notoriety thereof should not have had before this time, proper influence on the minds of such proprietors: As it is discoverable in every carpenter's yard, that in the inside of the body of an Oak, if any thing large, when cross cut near the *Butt-end*, the circles which denote every year's growth, are found to be rather longer from the pith on the *east* and *west sides*, than on the *north*; but much longer still on the *south side*; and this only as having had most benefit of the sun: Infomuch as the same pith which, if not quite, was very near, the center of the Oakling when not bigger than a man's thumb, becomes not the true center of it when grown old, by two or three inches, sometimes much more, as I have often prov'd.

THE

THE use again I make of this observation, is this : If Oaklings are much hous'd, as in the case I am now upon, and their bodies greatly shaded by each other ; as the inmost of such must be ; every side of their bodies is then a kind of north exposition, and must inevitably lose a great share of the partial benefit of a more dilated southerly extension of their bodies, for want of an open sun. And if the *Dendranatomists* are consulted, their report will be, how much greater the sap vessels are on the before mentioned side—

AND whence came the notions of *simpathy* and *antipathy* to be exploded, in vegetables, as why some love, and some again hate each other? But from the discovery that the latter proceeded only from such as affected one and the same nutritious aliment ; and from the former's attachment to a dissimilar.

AGAIN, both in this respect, and in regard to the great injuries all kinds of vegetables receive from each other, by too great a propinquity of place ; especially if they

are of the same kind ; the like apprehension, and the like remedies are applied and brought down to the meanest capacities, in frequent instances both in *husbandry* and *gardening*. But more unheeded error ! in places design'd for compleat timber. Each princely Oak like other sovereigns not liking to have it's own *capital* near others dominions.

NOR can any party of virtuous pleasure be the least pretence : For neither so adust is our clime, or hot our blood as necessarily to covet such a *Fresco* of cool shades, as *Horace* meant by "*gelidum nemus*;" whose close above, but airy canopy below was indeed fittest for the "*chori nympharum leves*" of a lascivious poet ; since groves exposed to more open sun, might likewise embrown the face of each fair nymph, and check his growing love.

NOR those now adays, (altho' so us'd) where the nocturnal *Orgia* of *Bacchus*, and the rites of the *Cythorean Goddess* are performed under voluptuous shades illuminated, at *Vauxhall* and *Ranelagh gardens*, who like rural nature best, when habited like a *Courtesan*,

tesan, as she is with like affected airs there : Lascivious urban Routes ! and happily unknown to country swains. There were indeed different intentions, and uses made of such shady *Luci*, in the times of the anti-ent *Druids*, as thereunder, by the light either of lamps, torches, or candles they performed some sorts of sacrifices to their appropriate fabled gods : From which lights, as most etymologists imagine, those gloomy and opaque thickets, obtained the name of *Luci*.

BUT the political use of the Oak that I am upon, is, the growth of compleat timber ; which in my proceeding confines me to say ; that, the case darkens yet upon the wishful views of the beforementioned Oak proprietors—That, by the very reason of the means and manner of the former restraint they have laid on their young plants, they will at last produce vimenious lateral germens ; when their final necessary distances from each other are allotted them—That, the like stands not only on my own observations ; but that I am enabled to join thereto, that of the correct Dr. *Hales* in his Vegetable *Statics*—But that the justness of
neither

neither may be doubted, let it be considered how it can be otherwise: For as there is some contraction in the inner vessels of such young Oaks, occasioned by the short allowance their bodies have been so long kept at. Upon so great a change; Such is the unaccustomed influence of the sun upon their naked sides—Such the unusual rarefaction of the sap thereupon—Such the activity then of the roots to encrease the store of it—So small and slender their heads, and thereby the more incapable to receive an uncommon influx into them—Such again the inosculation of the inward horizontal vessels with those that run strait up—And such is the acuteness and polarity of the particles of which the sap is composed—That the *arbusculæ* will thereupon at last break out in their sides—

I DECLINE ranging the whole aggregate, in the rear of this posse of objections; as I think one half of them, if remember'd, are sufficient to invalidate any reasons brought against them.

WHATEVER part of the foregoing arguments have previously been sufficiently inculcated

inculcated by other Writers, none has rescued me at all from animadverting upon the *singularity* of the natural growth of this illustrious plant in *England*; it would therefore be unpardonable in me to omit it, as the whole of this *Traët* depends upon it. I call not that, properly, a natural manner of growth, when it is confined and restrained, by growing in too thick an *Assemblage* with each other; But my business now is to consider it, when self sown, or otherwise, as not having too near a neighbourhood of any kind above ground, nor has been rivalled by any masterly suffrutices below—It is thence to my purpose to consider it likewise, as arrived to twenty, or thirty foot in height, head and all, or a little under, or over; by which time if the heavens have been any thing favourable, something of judgment may be made of it's future produce, altho' not a perfect one; as no body then knows, what unfavourable strata's of earth it may afterwards meet with—But alas! it is from the *dubious heavens* proceed it's obstruction to aspiring, oftner than from mother *tellus*. It is therefore great impropriety for me to call it, the Oak's natural manner of growing with us, in either case,

at

at the usual height and size, it frequently does; because, it is no otherwise natural to it, after the injuries it has received from the inclemency of our air, than it can be said to be natural to a young person to be dwarfed, after he has suffered by external violence in some of his limbs—That, such is the unhappy difference between us, and our neighbours on the *continent*, of air in our climate in the spring, and beginning of summer oftentimes; appears from the universal consent of all travellers that have been any time there. The *continenters* having ever been much happier than we, in a continued equality in the influences of vegetating warmth, at those timely seasons; which brings to my mind what *Virgil* says in one of his *Georgics*,

*Ver adeo frondi nemorum, ver utile sylvis,
Tum Pater omnipotens jæcundis imbribus
æther,*

*Conjugis in gremium lætæ descendit, et
omnes*

*Magnus alit, magno commistus corpore fætus;
Inque novos soles audent se gramina tuto
Credere*—————

And

And again,

—————*ver magnus agebat*
Orbis, et hybernis parcebant flatibus Euri.

The inhabitants of *Italy*, nor any other part of the *continent*, have such alternate vicissitudes of the weather, many times as we; fallacious weather! When it is winter it is continued winter with them, and the successive warmth likewise continual—Nor is it otherwise even in the northern part of the continent: Hence the *Norway*, hence the *German Oaks* have their procerity and clearness in their bodies—Hence the great importation of *Hambrô* pipe staves—To confirm which instances before by a most notorious precedent; I need only refer to a treatise of *Hereſbachius*, printed so lately as in the year 1695, and dedicated to the then King of *Denmark*; in which he professes,

“ Nostrâ ætate in *Vuestphalia*, non pro-
 “ cul ab arce Altenana, quercus extat 130,
 “ pedum caudice ad priores ramos, crassif-
 “ tudine trium ulnarum—”

Where note, a *German ell* is said to be
 three

three fifths of an *English*; whence the much greater clear bodily length of that, to the tallest Mr. *Evelyn* has mentioned, is, if I compute right, as 78 is to 54 feet. Blest *German* phoenix! Then again as to the clearer bodily lengths of *Norway* Oaks; every converter knows the fact, altho' not the cause.

AND shall the *English Gardiner's* skill be applauded, and his ingenuity be rewarded? for cherishing and protecting the bloom of foreign fruits, (the cates only of luxury) against the intemperature of vernal air in our clime—And shall this plant, the ministerial guardian of every temporal good we enjoy, not be thought meritorious of our care?—

To sum up all, if the temper of the air is various, but, the consequential effects thereof are constant, in producing lateral germens and too early main arms, in this our clime; to the obstruction of more frequent bodily greater lengths—if, over and above, contagious insects—Hot dry weather—And the falls of Honey dews—Are found to happen so often as to force nature
very

very frequently to decline from her regular course, and thereupon to accommodate her self to the misrule of such accidents in *Britain*: It must surely be allowed, that upon every such involuntary perversion, some kind and able Assistant is wanting, timely to restore her, to her prime destinated motion. And may it not plainly be perceived, as far as an aspect of distress can be said to do it, that without such an officious prolocutor as I am, she her self invokes a restoration?

I SHOULD not have thought it so material to dwell so long upon the several causes of lateral germens last mentioned; and their and other restrictions to the corporal altitude of the Oak, but to prove them all in an equivocal sense, to be unnatural in *Britain*; or otherwise, natural to *Britain*.

To obviate one unreasonable objection to the preceding minute dogmata of mine; I believe in human kind, it would hardly be allowed a good argument against education; that some great genius's have arrived at great knowledge without any. In like manner as it has been shewn, that many
Oaks

Oaks have arriv'd at great perfection possibly without any discipline of this kind: Still the argument in both cases must hold good against any such objection; unless it could be prov'd, that neither could have been better'd by a distinct education.

I PROCEED next again on the mischiefs arising from such accidents, on the Oak's natural manner (we'll call it) of growing in *England*: And first, the lateral germens so occasioned, when grown any thing large, render the timber coarse, and spoil the riving quality of it—Then if by chance, the roots meet with some fortunate lower strata's of earth; the upper boughs get such a predominance as to kill the lower; whence fatal holes are caused in the body when boughs rot off unregarded: And as custom is second nature, I may say, naturally unregarded—The third but more fatal effects to an Oak's ever aspiring again in a clear body, are, contrarily, from the first course of boughs, even when no bigger than the sizes I have mention'd to be *debarkt*, gaining from rich strata's, so much strength extraordinary, that all the upper *Tier* are not ever able afterward to suffocate them—however qualified

lified the earth was to carry out a tall tree: Because the reclining posture of their lower boughs something downward, is such (and that is ever the case when they are loaded with leaves) that, they draw to themselves the ascending sap in the body, like so many artificial *Syphons*, so that the sap in order to a higher ascent cannot slip by—

WHY this should obstruct the clear spiral growth and bolar height of an Oak, may be easily conceived, if we consider that the *roots* of such great boughs, have crost and broke the perpendicular sap tubes in the body, which to be sure contribute mostly to any trees aspiring; and acquired so close a union with them, that they draw all the sap arising therein to themselves, and whatever more they can extract from other parts by lateral suction, or (call it) attraction. And by that means keep the upper boughs in too weak a condition, ever to become their superiors in the sense meant—And if the soil be weak, it is very frequent for the top, and boughs near the top, to die—Hence were there not frequent dashes of rain, and great dews in summer, which the upper boughs have the largest share of; there

M

would

would be more frequent dead a-top trees than there are—

BUT if on the contrary the soil is very good, and consequently the Oak very vigorous ; the effects thereon many times are, that there will oftentimes be as much content of coarse timber in the head, as there is good in the body, and therefore the least profitable returns that can be made to the owner ; *viz.* from a great burthen of firewood in it's *Briarean* arms ; unless such arms are likewise timber, and then there is great loss to the owner, in the taking so many girts in measuring—

WHENCE, how singular a notion it might at first appear in me, I hope, I have plainly shewn the *singularity* of the Oak's manner of growth in *Britain* ; What agents are instrumental to it—What are the several injurious passions of it—What reflections led me to a salutary restitution thereof—What are the natural events of such experiments—As likewise the necessity of the interposition of art—together with what the proper art, is,—And lastly, that tho' the organs of the Oak, have their primary formation from

3

nature :

nature : Yet that, it is human power at last, directs the most pleasing and most profitable form—

HAVING spoken of one defect of this puissant, but withal too passive plant, or rather a defect of our clime in respect to varying warmth and cold ; I am come now on the contrary to speak more particularly of a *climatic* excellence of ours. For altho' heaven has not appropriated the Oak peculiarly to our territories, as it has the olive and the vine to southern climes ; yet has it with partial and favourite distinction, in the *superexcellence* of it's constituent parts made it superlatively special to *Great Britain* ; especially for naval uses, in which consists it's principal valuable characteristic, above any that grows upon the continents of *Europe*, or *America*. For it is known from long experience, that, a six pound, or as Sailors call it, a six pounder bullet, will pierce thro' a plank of a *British* built ship, and not leave a hole big enough to put even an egg in after it : Divine signature of the merits of this vegetable *Mars* ! And this one specific quality enables our floating castles, to rival and even gain the superiority



ority of those on land ; whereon the unceffible stone, or brick flies into millions of difunited parts. The truth of which let *Porto bello*, and fort *Chagre* for ever speak to lateft *Britannia's* fons. But fuch virtues of it, and more of the like, in oppofition to *continental Oak*, is better known, than priz'd—

I DECLINE here fpeaking any further on that head, as I think enough has fuperven'd, without my ftaying to the laft, to be thinking of palliating, if I could, on my own account, any impropriety in the management of my arguments on the Practices yet recommended.

AND prior thereto, if it would mend the cafe, I fhould readily likewise exprefs my concern that with this unexercis'd Pen of mine, I have not been more able to make it delightful reading to all ingenious Oak proprietors.

As to the mechanick Agents, I hope I have fucceeded better ; being perfuaded I have more appropriately adapted my felf to them, by the plain delivery of my Rules,

and the little mixture of uncommon thoughts. Nor is every remote circumstance of that kind entirely new and out of the way to them, who have ever taken a book in hand to read on subjects bordering hereon—Indeed the field of vegetable nature, has been so travers'd within fifty years past, that if such a thing was design'd, it were impossible to lead them a circuit of any length in wholly untrodden paths: Yet it will mostly be found, that the paths they have before reconnoiter'd, have here a *different termination*—Upon the whole, I have the pleasure to think, and the satisfaction firmly to conclude, that from their knowledge so already acquir'd, and their own prior experimental knowledge in the several growths of *grain*, and the *kitchen garden*, and other *agricolan* productions; that I may say to them, as Monsieur *Rapin* said to his country men on no unlike occasion;

From further Laws, my conscious mind
refrains,

I write not to such rude, unpolish'd swains,
As in old times *Laurentum's* country till'd,
For Art now reigns with nature in the Field.

I THINK it however proper, before I finally finish this Chapter, to explain myself as to what I lately said [yet recommended] which was meant on the consideration, that it is not the happiness of all gentlemen to be blest with soils, that will at any time produce Oaks of sufficient sizes for naval timber : But withal many of which are already past the scantlings propos'd for the discipline mention'd : There being in divers parts of *England*, woodsoils of a middle composition between the very poorest, and the most propitious ; having at this time several Oaks thereon, which tho' arriv'd to ten feet, would rarely ever reach fifteen, for the use of a carpenter : hopeless of any reviviscence ! being endu'd with very little more power, than in their latter periods to preserve themselves onward in a living state ; at most grow but very slowly, even imperceptibly. And yet if the same are taken before of entirely finisht growths, are greatly to be improv'd ; at least set forward growing, by a very different—very easy—and little expensive mechanism—I am come to say that the very poorest Oaks may be thereby better'd.

BUT

BUT as I included not the same among the heads mention'd at the beginning, and as it is likely I might have been pardon'd by some, if I had not wrote so much already upon the other ; I shall decline the saying any thing in this discourse thereof : But, by way of *Peroration*, I take this occasion to profess, that whatever disrepute speculative reasoning may attempt to bring upon the foregoing practice—Or alike may arise from the misconduct of an empirical hand—Or even the mischance of a single miscarriage or two of the judicious—And then only by some almost unprecedented mal-influence of the soils, or seasons—Or possibly by some *Idiosyncrasy* in the plants themselves—The like on trial, will be found incidents in that case, which will be, I trust, vastly overpower'd by the beautiful successes of great multitudes of others : And that, whether or no I have realis'd the merits of that mechanism by dint of argument.



CHAPTER VI.

THE *Theories* and *practical* parts on the subjects I purpos'd here to treat of, being mostly ended; it may not be impertinent to take a view of some points thereof in a more extensive political—and different pleasurable light—And to offer reasons why some soils are proper to make choice of, for planting new woods upon, and some are not—Together with the means and manner not only of *forwarding* the growth of the Oak from an acorn, but thereby the readier advancing that beautiful *savage* to the highest perfection of it's nature—To descant also on the essentials of the vegetation of it with us—And to add a few moral and physical reflections further upon it, and in the conclusion some emblematick illustrations on the whole—

BUT

BUT on so vacant an occasion, and in regard to the *Title* hereof and the *Homonymia* I have in part assum'd; I crave to be indulg'd the liberty first, of promising a few animadversions on the antient *British Druids*; as likewise because I have so long labour'd (tho' *a la maniere rustique*) to rebuild their nemorous temples: In respect to which, it might indeed have prov'd a more agreeable amusement to a curious antiquary, had I been able to have enrich'd the *Ichnography* by me exhibited, with authorities collected from their antient *Archives*, to countenance such my manner: But all memorial of that sort is perisht with them; and it is following the chace without any scent; and therefore my pretensions are no higher, (however so, ambitious enough,) than having offered at a less instructive, at least a less entertaining equivalent—

THAT the antient *Druids* had some kind of manner of such architecture, is highly probable; since many *Latin* authors have cried them up to have been men of universal learning—In particular *Montanus* intimates,

X

mates, that they were "*causarum naturalium studiosi*"—As their *manfes* were entirely in woods, having the objects meant, continually before their eyes—And as they are known to have been the unfortunate idolatrous religious of their time, and their principles for ought they could foresee, were likely to continue to latest ages; we may very reasonably conclude, that not taking up with the natural productions only of this royal plant, which they found in *Britain* at their early coming, they might at first thought discover, that by applying *art* to nature, they might attain a more venerable grandeur and stateliness to such their temples; not without some view of the greater veneration accruable likewise thereby, meaning the fruits of veneration, to *themselves* and their descendants—

I KNOW not whether I should deserve any thanks from them, if they were living, to make a sacrifice of their moral honesty, to compliment their understanding; so far as to assert, that there is good reason to think, notwithstanding the number of their idols, themselves were only *Polytheists* in shew, to amuse the vulgar; as they have
advocates

advocates on the latter side, that they had discover'd by the light of nature, one only *God*—As therefore the Oak above all other parts of the lower creation shar'd their most favourite affections, from the captivating form of it's outward frontispiece—it's lofty colonnade gilt with silver'd bark—it's awful venerable and majestick head, together with the many grand and magnificent uses it was capable of being put to in their times—Nor do I offer these as all the considerations thereupon, which they might be invited to look up to one sole divine Being for the author. And I believe there is no believer of the like kind now but has some one more favourite proof than other of the same, from his own appropriate genius. *Galen* is said to have receiv'd his conviction of the like sort, from the skin of the lower part of the foot.

For my own part I should not think I did my duty as a *modern Druid*, did I not glorify the divine Being, over and above the considerations mention'd, for that *Group* of miracles that is to be found within it, since the microscope has open'd the cabinet, and discovered truths which other-
wise

wife would have been accounted fables. But Dr. *Grew* in his anatomy of vegetables, and Mr. *Ray* in his wisdom of God in the creation, have nearly exhausted that part of my subject : Sufficient antidotes against atheism !

WHEREFORE I proceed to the other articles mention'd ; and the first consideration that presents it's self, is, the estimate of the comparative value of equal returns, that may reasonably be made of the ensuing growths of Oaks, with money put out to usury : There being no likelihood, but when there comes a peace, the national interest on money will be reduc'd to three *per Cent* : For even now in time of War, the Crown —The Publick—And the Merchant are all pleading of the *Parliament* for it. Nor can we trade upon equal footing with the *Hollanders*, till it is so. Which suppos'd reduction yields this triumph to it's new rival ; that the same is liable to no bad securities, either on *bond*, or *mortgage*, or mischance of *fire*, or failure of *funds*, or *bank*.

AND what I think well supports this comparative computation, is, that the annual growth

growth of a young Oak, manag'd after the manner prescrib'd ; becomes the more likewise in quantity of timber than it otherwise, or *naturally* would do : Which altho' deducible from what has before been said, this occasion requires me again to specify ; as also to revive the notice of the material consideration of the advance of such Oaks *formal* value afterward : Both which occurrences alone, without naming any more, no doubt will make the yearly encrease of this plant to amount to three *per Cent. ad valorem* ; in every period of time to it's full maturity, that any such are near the size of timber.

I NEED not be told that in the ordinary growth of undisciplin'd Oaks, such an estimate is set too high, that is to say, one with another ; but fear not being told so in this case ; altho' I pretend not to be assur'd of the contrary by any *statick* proof. And what would further countenance this intimation, is, if I likewise call to mind the rising value of Oak timber, that is large.

'BUT what needs no proof, is, that timber pays no taxes, unprecedented property !
singular

singular exemption! The only emblem of civil liberty left to an *English* man.

YET, even admitting that for many generations, there was a continual peace and small taxes; is there any *likelier* means for all landed gentlemen to perpetuate a genteel sufficiency to their present and future offspring, than by rearing up and preserving a good stock of Oak timber? As the same may happily come in season one day to prevent the dismembering of the free hold, or mortgaging, which many times proves worse; and that either by some unforeseen misfortune to the owner himself—Or in case of reformation, to salve the errors of an extravagant heir—Or for what may and ought to be held in mind, *viz.* the call of an honourable provision for younger children—For the want of which on occasion of a *numerous* issue; estates that are not over-large, in some improvident families that way; very frequently dwindle away, and come to nothing. The younger progeny at least having nothing but a few old pictures, or coat of *Arms*, to shew from whence they are descended. Sad emblems of pity! And what young gentleman is there,

there, that enters into a married state, that is not liable to such casualties? Which are strong inducements not only to keep up his present stock of timber, but to raise more.

IT is said, we have one great family in *England*, that so happy a reservoir has, by reason of one, or other of the beforemention'd accidents, been preserv'd from declining, three times in one century. Blest restorative!

I AM not all this while thinking of the Landed, Navy, or Army great officers, or those in high posts, in any other parts of the administration; who usually are not long in making provision otherways for such pressing occasions. But the Crown in all it's numerous collection, has not *places* for all that are desirous, I might perhaps say, many times want, to serve themselves and their country so honourably.

AND *pensions* never come to the share of an honest country gentleman: Who is therefore doom'd (if I may so call it) to live wholly on his rents; and whose necessary policy is become the slow œconomy of saving,

true

ing, or laying up in store, for the prudential purposes mention'd ; something more, or less at every year's end—Or what is every whit as possible, against any further subduction out of his private income, to supply the exigencies of the state. Now of all savings in a gentlemanlike way, sure that of timber-saving is ordinarily for such, the Easiest—Surest—and the Delightfullest—If it makes me not too offensively guilty, as perhaps many times before, of inappropriate initial capital letters, and of lines, which however in part, I am not without present great authority for. Being yet, by me design'd as *Breaks* chiefly to a hasty reader.

NONE sure, of that worthy set of men last address'd to, that are advanc'd in life ; need be admonish'd by me, that specie left by a parent at his decease, is too frequently carried off, by one needless invention, or other, in case the heir be *young* ; while in the time it will necessarily take him to turn timber into cash (unless he is infatuated enough to lump it away) and some of his friends intervening ; there is a very great probability of the young gentleman's getting rid of his unadvis'd desires : At least
he

he will not part with those *stars* and *garters* of his estate for toys. For no less is my vanity to think, they will appear to even him, if manag'd by the rules prescrib'd.

THE case is the same as ready money, what the legatee leaves behind him in *South-sea stock*, *Bank notes*, or *India bonds*. And what *stock* is there like a *stock* of timber, for making returns to the owner with more Steadiness—Security—and Equality in the end?

TIMBER then, is a legacy of an intermediate permanency, between the possessions mention'd, and *Fee simple*, or *terra firma*: Even more fix'd than money on mortgage, which is many times paid in; whether the lender will, or no: What no glaring trifle can visibly appear in competition with: Even *diamonds* must yield to it's lustre, as they pay not their owners for preserving. Wherefore as jewels like flowers and many other, both natural and artificial ornaments, have their admirers only for their gracefulness and beauty: How much better are those objects for gentlemen to place their admiration on; where both

N

grandeur

grandeur and gain are attendants upon beauty? Blest donation! to a son where the father has liv'd so providently, as not to have given occasion to have it cut down to pay his debts; even otherwise happy donation!

FURTHER woods are highly serviceable to one great pleasure of a *country* life, as, (now the fields are clear'd of all harbour, by the monopoly of the plough) they are the only nurseries of *game*; and they who are not lovers of the pursuit, are generally the greatest of the entertainment. Wherefore that plenty of *game* may never be wanting; it is even become necessary for all country gentlemen, that are lovers either of the sporting part, or eating, to plant more groves near their *villa's*; and not only so, but cut off the irregular angles of all large enclosures, within any reasonable distance of their *Seats*; and turn them likewise, after they are well fenc'd in, into Oak *platoons*; which altho' a military term, has been some time adopted into the art of rural gardening. Nor can there be any greater natural beauty added to the outer borders of an estate, than the check-
ering

ering it all over with these peaceful *plac-*
toons.

I HAVE often wonder'd that our most ingenious designers in extensive gardening, have not before now, recommended themselves to the nobility and gentry, by the invention of such *campestrian* decorations; The expence would be but little in the fencing part, there being two sides already done to their hands, and the keeping next to nothing. The pleasure they give consisting in walking, or riding round them on the outside, and no less in viewing them at a distance. It matters not how foul, or overgrown with bushes they are within, for the purposes mention'd.

WERE it my business to contrive to please the taste of men of fortune it should be *this way*, at least this should be one: As these new sprung up interior Royalties (if for the sake of the following meaning I may be pardon'd that denomination) will be a kind of visible and tacit restraint, without further notice, upon any gentlemen that are strangers invading them, and more so upon others, without leave; as such en-

trenchments, not only with more outward shew, but more apparent costly right proclaim the property of that kind therein to belong to the land-owner of such *colonies*.

ANOTHER advantage therefrom, is, that *poachers* and *snarers* cannot go in and out from thence, but they will be in danger of being heard, or seen. And whoever first has these sanctuaries, will have all the near adjoining game, which likewise will take to them when the enclosures are never so *young*.

AND on small estates these *sylvulæ* tend to make a great shew of timber with a little; as the several cantonments, in content of the whole, of no more than six or eight acres of land, would infallibly do.

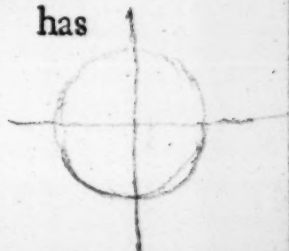
IN small fields, if the acute angles amounted to no more than a quarter of an acre, they would have a proportionate effect; and when the Oaks were well grown the new made fence, on their account, might at pleasure be beaten down, and lie in common with the proper field again: Wherefore

fore these *campestrian*, would not be like many *bortensian* prettyneffes, without profit. During such enclosure and after, (as they would in that time be got to a good head) the space between the trees, might be made an excellent nursery for bushes; which tho' I hinted before, I did not observe how scarce a commodity they are grown, for the use of the occupier of the adjoining lands; which would induce even a tenant upon lease, for the less consideration to part with such angles; as they are the more troublesome to plough. Nor is there any form that the like number of Oaks will make so grand and showy an appearance in, as in a triangle.

THESE towering *thickets*, as I think I may properly call them, (which alone will prevent the planter's name being thrown into his grave with him) may be much thicker planted with Oaks than large woods; Since they will of course have on their triangular sides more air; and require inwardly so much space neither, if they are not design'd for large timber. The case is far otherwise in woods new planted in fresh and vigorous soils; especially where the planter

N 3

has



has a view of obliging *posterity* with *magnalian* growths.

AMONG the great variety of methods laid down by preceding writers for wood-planting ; I have met with none singularly directed to that end, at least not sufficiently ; I will therefore officiously venture to give my adventurous *Idea* of one ; Which also over and above the other considerations, I should recommend particularly to those, who would be much pleas'd to see the very great efforts, that nature with moderate assistance can make in such productions, during their *own* life ; and which, if of any continuance, even the planter himself will have no small enjoyment of ; as even in the first stages of their lives, such predominant plants have appropriate charms : Might I not likewise say, have the greatness of infant *nobles* to demand our homage in their nurses arms ? Let but any man of letters that has a taste of this kind, be possess'd of such young objects, and he will need no further arguments, to incite his admiration of the early efforts of their vegetable soul ; if with the *Bishop of Cloyne* I may be allow'd so to speak — see his *Siris*.

BUT,

BUT, he that must owe all his knowledge of such things, to the labour'd information of others, without any reflex notions of his own; will have but an imperfect comprehension of such matters—Or even he that has competent qualifications that way, if he is indispos'd to such kind of reflections—

YET are the minutest objects of that kind so far from being below, or unworthy the consideration of the *wisest* man; that the greatest *philosopher*, that has yet liv'd, has never ventur'd to declare his sufficiency fully to comprehend the invisible manner of the workings of nature, in their generation, nutrition, and accretion.

BUT as some larger apparatus is proper for the introduction of such my *Idea*, I shall endeavour to carry those depending matters further, and connect them closer, on this first sylvan scene; than has been done by former writers on the like: Which will save those the trouble, who are no adepts herein, of turning over a great many sylvatick authors, and at last come short

of what I intended at least, to write thereon.

STILL before I go about formally to shew, what human mechanism is properest to promote a kindly acceleration of the growth of these no indocile plants; it is convenient first to discuss further some points on the nature of *vegetation*; with respect to such of the elements more particularly concern'd therein: Whereon it is to be noted, that with the utmost art, the grandest Oaks are not to be made the produce of all soils indiscriminately.

FOR vain is any such hope in soils whose understrata's are a dry, sharp gravel—Or barren sand—Or very rocky—Or that are an unmixt chalk—Or impenetrably stiff and solid, and withal poor and jejune—Which is usually the case of the latter; so as hardly to admit entrance, to the longest autumnal rains; by reason of the almost lapideal continuity of their parts.

Now, in the former soils, there is no moisture left, before half the summer, ordinarily, is out: For in such, the water
coming

coming from the heavens, very quickly percolates, thro' both their superficies and sublatent parts, and with it the vegetating particles therein contain'd.

AGAIN in their reverse, *viz.* in a soil too closely compacted, nor nitrous snow water in winter; nor solar heat in summer, can find admittance; insomuch that no plant that roots deep, as the Oak is known to do, can thrive therein.

BUT the *territories* I should choose for these forestian kings underground, (and they are best found out by digging, or boring) is, where the same is four foot deep, and the deeper the better, a kindly clay—Or fat loam—Or marl—Wherein the moisture readily enough enters, and long enough resides, bounteously to support the thirtiest plants, throughout the summer, or even autumnal scorching heats. And lands proper enough, may likely be found in every county in *England* of that kind: and whose superficies is not naturally over kindly, either for grass or grain; and consequently of no very high estimation otherways.

BESIDES

BESIDES which I should say, that such a species of earth, is pervious to a sufficient share only, of air impregnated with solar heat; as in the too loose and friable soils there is more than necessary: Again there is less, in the overstiff; beneficently to excite the very lowermost roots of an Oak to a progressive vegetation, and the surplus fluid therein which they want not, for their necessary occasions, to transmit above.

THERE is also more *sulphur* and *oil*, for such roots to extract out of the earths recommended, and thereby more solid parts, for a more plentiful fixation into solid wood. But this sulphureous, oily solidity in the sap of an Oak, is chiefly in the height of summer; as it has been found to be very watery, and devoid of such consistencies in the spring; which possibly may be the reason that makes it's shoots so impatient at that time, in respect to Cold.

I PROCEED to say, that hence great care is surely to be taken to suit any plant to it's proper genial bed. Since not man alone; or other animate beings; but all the
vegetable

vegetable part of the creation likewise, nature in that respect has endu'd, in an inferior sense, with passion of eager love and averfion.

WITH so little stock of philosophy as I have, if it would not look too much like my pretending to be a compleat *systematick* writer; not only on the apparent, but likewise on the invisible causes, and the manner of the vegetation of this miraculous plant; I should take this occasion, with more becoming presumption, to say, that immediately after an acorn has been entirely independent of it's subsistence from the two lobes; the future encrease thereof, is occasion'd by alien, but withal *homogeneous* particles brought thereto, by the means of water; and that as the same does abound more, or less therewith, the growth of such plant is more, or less only.

ACCORDINGLY that if water were strictly simple and devoid of all foreign principles; it self only would promote little, or no accretion of a plant. And that altho' water, on accurate probations, is allow'd to be no where a *simple* element in the whole sublunary

nary universe ; Yet that the disproportion of such inhærent fœcundity is very great, in only the known instances of well, and rain Water.

AGAIN, as to the best of waters, *viz.* those immediately from the heavens (for those artificially impregnated with lixivious salts, have nothing to do here) it's influence on the vegetation of such plants as Oaks, is, more, or less, according as what species of lands they grow upon : As the fat, unctuous clays, and soils of like contexture, not only retain the water of any kind, but yield thereto, a colliquated nutriment of their own, congruously adapted to the pores of the roots ; by which association with the aforesaid fluids, the far better growth of the Oaks is promoted, than in Hungry—Sandy—Light earths—which have nothing but the water, so long as it lasts to forward them.

HENCE, the quantity, or proportion of this auxiliary posse, in the sublatent strata's of earth, in union with the rain from heaven, as it abounds more, or less, is, the main guidance to the proprietor to ascertain the determinate

determinate modus of the proper height to raise his Oaks; in which case, it is better to under, than over do.

THERE is nothing more certain, if it need be said over again, than that there is a *Maximum quod sic*, as Mr. Ray expresses it, in all vegetables: Or to speak in this case more expressly, a determinate proportion of parts, beyond which, the distinct species of earth they grow in, cannot properly carry them out.

NOR is a sufficient judicial knowledge therein one way, or the other, unattainable by any man of sense; as a judgment many times may be made at sight, from the guidance of some natural growths (making allowance for the errors before hinted, which nature is subject to) in one and the same earth—or nearly adjacent—or otherwise, on just examination, similar earths; in order to regulate the discretionary height at last, of the clear bodies of his trees, according to the just capacity of his soil—But let not the natural forms of low-boughing trees, so the same have large heads, with their main arms inclining to such erectness and straitness,

ness, as is possible; provoke his fears that the like soil will not carry forth a tall bodied tree, as the like sap very probably from whence so large a head was generated, will under the direction of the orthodox Methodism before laid down, fully answer his desires.

IN case no kind of such governing precedents near at hand are to be found, there still remain the directory rules inscrib'd by me, in relation to the diagnosticks of the ability that way, or impotence of the several soils, I have lately mention'd; which will be a great help to the ingenious agent, provided the description be likewise attended to, of the salubrity, or insalubrity of such Oaks, in exemplar'd situations, when grown up to near the content of timber. But it is no way unlikely that such final modus may be ascertain'd upon much clearer principles by some future adventurers. But who I doubt not will agree with me, that in one and the same superficial soil, the agent will find cause to vary his hand, as to the height of the clear bodies of Oaks therein; as the understrata's are so various, and why should I mention what is more out of human sight,
viz.

viz. the variety of their own constitutions, as to good, or bad, originally.

AND now I think I have pretty near, if not wholly done with philosophising; to proceed upon a certainty, in behalf of the idea propos'd at first, but which I must also call a *singularity*, as not having been animadverted on either pro, or con, by any former writers in their way of planting woods.

THE case is, I would recommend that there be no undergrowth in such new planted woods but *basel*. That Humble Low growing plant—Fleet rooting—and not Ravenous of moisture—offering it's self as the most eligible for such ends above any other. For at no age is it so aspiring, as to obstruct the godlike influence of the sun—driving rains—and sufficient air—from cherishing it's natural superiors; like to Ash—Sallow—Birch—

It likewise rivals even ash for the use of the cooper, as *sylva cædua*; and altho' the growth thereof in bulk, is not so large as any of the other sorts, for *firewood*; it makes
it

it up in value for several more mechanicks: And where it lies within the reach of sheep walks, is preferable to ash it's self. I have said nothing of the detriment, from the undergrowth of it's own kind, *viz.* Oak; as it may be collected from what has long since been urg'd, to be the most injurious of all.

As to many other particulars, I shall not vary overmuch in substance from some other modern writers; namely, as to the preparation of the land, and the properest manner of planting the acorns and hasel nuts; let the ground thereto intended, be fallow'd in like manner as for wheat, or beans, and sometime in October following, let the same be sown with a proper proportion of hasel nuts and horse, or garden beans promiscuously, unless the owner chooses wheat: Likewise let many more than a bare sufficient number of acorns be gather'd from *tall* timbers, rather than pollards, in their due season, and instantly put into sand, *stratum super stratum*, where mice cannot come at them; in order that the best may be cull'd out for setting, at the time I shall mention.

4 As
 as feeding on the same *subulum*.

Altitude is an essential
object in [193] point of profit.

As soon as the autumnal rains are fall'n,
which very likely will be before Novem-
ber; thirty holes should be made on every
acre: Which number would be too many
by near a third, were the produce not to be
educated to the heights mention'd; by which
means I might say near one third is got pru-
dently in number, and more than a third
in good quality and value afterward, upon
every acre, than when as ordinarily ma-
nag'd.

30

an
acre.

LET likewise every hole be made six
foot diameter, and four spade-bit deep; the
earth thence taken may be thrown in a-
gain promiscuously; strewing by hand at
the same instant, a small quantity of straw,
or stubble at proper intervals, to be equal-
ly intermixt; in order to keep the earth
from too compact a reunion. By this
means the earth of every hole will lie near
a foot higher, even when settl'd, than the
area of the field; which will be a great
means to cause the horizontal roots of the
Oaks to enter, when time comes, the su-
perficies of the adjoining soil, wherein the
richest *pabulum* for them lies; and feast
O themselves

themselves the more on the luscious aliment of summer rains; which if deeper in the ground would not reach them, neither so frequently—nor effectually—

IN the center of every such fill'd up hole, after the earth is a little settl'd; let a small one be made about the size of a bushel; spreading what thence arises upon the former earth; let the said little cavity, be presently again fill'd with some well digested mold, not muck; arisen from some headland long before dug up—Or from some common—Or greensward in the high way—Or scowerings of ditches—Or pond mud well ventilated—

THE Christmas after being come; by which time, the field mice have laid up their winter provisions; let the acorns be taken out of their occasional residence: Because by that time they will be chickt; and half a dozen of the most promising of them, be planted about three inches deep, within the compass of every one of the small holes; pressing the earth down again gently over them,

3 inches
deep

THE

THE halle nuts—Or beans—Or wheat
destroy'd to the content of the diameter of
such holes; being of very small considerati-
on. I think further to intimate that I make
not any account of the straw, or stubble;
on account of it's fertility when digested;
that it will communicate to the earth; but
only as it will be a future means to facili-
tate the entrance of the very tender fibres
of the roots into the same, thro' such little
meatus's as the stubble, or straw will cause
when rotted.

THERE are who prefer Oak-set to a-
corns, on account of the hazard of mice;
cutting the same down to the ground at
two years end; and thereafter leading up
the most masterly shoot only. 197

I SHOULD be guilty of an omission to
those that are not vers'd in the most elegant
designs of this kind; not to intimate that
neither sort, should be planted in strait lines,
saving where walks, or vista's are intended;
but after a natural manner: Art therein ap-
pearing best in masquerade. Resemblance
—Rule—Regularity—That are often justly

made use of in other plantations have nothing to do here ; since the *Europeans* have adopted the true finess of taste of the *Asiatics*, in that and many other cases : Wherein such objects (to say only agreeably confus'd, would be below the dignity of the idea, well known in *China* by their idiom of *Sharawadgi*) have much the precedence, of a Stiff—Starch'd—Studied order. Well express'd by the *Latins*, on other accounts by *disparitate pulchrior*. A notorious instance we have now of the like *British* innovation, is, in the modern preference given to *serpentine Rivers*, before large strait canals. But had I not found the opinion current, of such precedent being borrowed from the *Chinese*, I should rather have thought we had taken it from the *Deity's* own manner, of planting woods, and modeling the starry heavens.

Come we now to the formidable estimate of the recommended, much to do—Why truly the charge extraordinary of the foregoing scheme, to the usual manner of planting woods, is such a trifle, to those who are dispos'd to convert lands to such great purposes ; that if any compute were
to

to be made, it should rather be, what more *beneficial* returns were to be made in the end, this way, than the common.

IN reference to which further ; how weak would even the plainest *Zany* farmer now adays think any one argued ? That because corn, in his great grandfather's time, did in some proportion grow, with little cultivation, and without any *artificial* cost, but ploughing ; that, therefore all more forwarding means are needless.

I MENTION'D not that after a year or two, the most masterly young plant should be left standing—Or that for a few years the earth about the ~~standers~~ standers, should be kept clear from weeds—Or put the owner in mind of good fences—Because they are so obvious requisites ; that I think no body will set about planting a wood, with uncommon care, that need be told of either.

IT might indeed have been intimated, that if it were eligible to the owner ; the hassles after twenty years growth might be grubb'd up again—Or that in countries where *sylva cædua* is much wanted, the

number of Oaks propos'd on an acre might be reduc'd, to give the same more influence of the heavens—More species both of kindly, or unkindly soils for woods might likewise have been mention'd: But I have declin'd enlarging thereon, as in a good measure the same has been treated of, by every sylvatick writer this last century; from whom may be further collected, what are proper for the Oak, and what are not: Yet even the late Mr. *Switzer*, among the rest, contrary to his own practice in other cases, has inadvertently omitted, or at best been too sparing, in giving reasons for the propriety, or impropriety of either, or to use his own word, in other cases—*Why*.

ONCE more in reference to an over-numerous plant of Oaks in respect to their propinquity to each other; and therewith, to conclude this head, and all preceding arguments thereupon: Were I to take upon me to be magisterial herein; it should be to enforce thereto, the application of the *Roman* proverb, viz. that the mediety is more (in the end) than the whole.

NEXT,

NEXT, to draw to a Conclusion of the Whole—Some circumstances immediately following, and indeed the outward appearances of this entire Tract, give me the unavoidable cause to suggest more expressly than at first, that I would not be thought by my Stricture of this Sylvan Beauty out of the vast Campaign of Nature, and this imperfect Publication of my Discoveries thereon, to have the determinate intention to acquire to my self a Trophy, tho' but a very diminutive one of Fame, or any thing else, It being certain that I should much rather have chosen to have made this my first small appearance in the Literary world incognito wholly, and consequently to have published no local memoirs at least of my adventures of this kind; but to have let the whole have come unguaranteed abroad, like a daughter of the Clouds, or the offspring of Night; if I could have persuaded my self, that the management of my past Arguments, had been as clearly convincing of the efficacy of the more feasible Practice, as the declarative power of course must be, of giving ocular Demonstration of the real Success of the most unpromising.

YET the *prototypes* thereof now alluded to, are not to young promising Oaks; which nature of her self had so kindly form'd, as to need little, or no reformation, *viz.* such select plants, as either the happy soil they grew in—Or an overgreat attendance upon them—Or a series of favouring seasons—Or their inbred uncommon excellence from an acorn, had unitedly render'd facil there-to—

BUT the references are to perverted precedents to such an end; and such as art could not have been more judiciously employ'd, to render them averse to any kind of discipline; so as ever to be transform'd into a capacity of aspiring with one erect head only, any more. In the first place they were transplanted some miles distant, out of a wood; and what most planters make great account of, in an Oak; their tap-roots cut off.

NOR on removal were reset, in a better than an ordinary wood soil; And being at first design'd for young pollards, their uppermost parts were cut with *forkt heads*; their
right

right up spire, having at the same time been clean cut off: And consequently, all the erect vessels therein, for ever destroy'd thereby: Instead of which three, or four horizontal, or side boughs, about a foot long each, were left on either head; after the manner of young pollards, which are design'd only for firewood, in the future growth of their heads.

My mind altering therefrom, on having had so great success, on Oaks, (I may call) not deform'd to those ends; I determin'd after they had grown in that fashion two years, to make experiment, whether it were possible, to cause the same plants to rise in an erect single spire again.

To push on my fortune; an essay of the like sort was at the same time made upon half a dozen young Oaks, whose heads, not before fenc'd therefrom, were many years successively brows'd off, by cattle: In neither of which however not one single miscarriage happen'd; no more than in the transplanted Oaks, which were half a score: Either inhibition to such purposes being the greatest possible, and are precedents
never,

never, or but rarely found among natural productions,

Now altho' every year henceforward, it being at this time but eight, or nine since their heads were so re-reformed ; will render the same more agreeable objects to a spectator, *viz.* when they are arriv'd to a little more height (their bodies being no bigger than the handle of a whip, about ten, or twelve years ago when remov'd, and of an adæquate stature) likewise clearness in their stems from some small marks thereon, occasion'd by their rectifications ; Yet is their present less perfect state, better evidence of the efficacy of every part of the mechanism.

THIS being yet, however tedious, too general a description. I should be sorry if a full exemplification ; which is wholly intended for the better information of the reader, should be constru'd as ostentation in me : The fond fruits of which being, I am conscious, never attainable that way—However on the presumption of it's being rightly taken, I shall finally conclude with some further particulars of their present state ;

state : Leaving thereby to no persons the power of doubting the verities asserted who have it in their power to be eyewitnesses. Whence I am led to be so comprehensive to intimate that,

The proper manner of bending Oaks—
 The figures of the barkrings and properties—
 The proportions of debarking boughs—
 What sorts proper first to be debark'd—
 What small kinds to be for a time left—
 The evident benefits of bark-lancing—
 The kindly effects of German Contusion—

And whatever else of like kind is needful to be observ'd by an unexperienc'd Dresser of the Oak, is still visible.

I am come to say at last

At Hingham near Stratford

In Suffolk.

P O S T

P O S T S C R I P T.

WERE there nothing for me to add, or explain my self on what has past; it is necessarily incumbent on me to intimate that the Publication of an Article mention'd in the first Chapter on Woodgrubbing, is at present suspended, some other Particulars being since interwoven therewith which require further deliberation. But the same not being numerous, might soon be got ready for the Press, in order to be herewith bound up in case this Programa meets with a favourable reception.

BUT on the most careful view I have taken on what I have written, I cannot find any material omission that I have been guilty of, unless that I have not sufficiently set forth the *universal* usefulness of the Oak; Which I must leave it to Posterior Pens to do;

do; and only add a little more comprehensively my self; That, how few Persons soever may at first thought look upon themselves to be concern'd in this Argument—Still it is certain, that besides our Sailors before alluded to, and such present happy Proprietors themselves—All orders and conditions of men directly, or indirectly; the very labouring Hind—the Mechanick—the Merchant—the Statesman—even the Divine, as much a Paradox as that may seem—and equal to all together, every King of *England* has an interest in themselves, or their Successors; in propagating, preserving, and perfecting the culture of this Select, this Shining Plant the *British* Oak.

I SHALL not be more express about the Mechanism recommended, that it may not look like a low cunning to shift in some uncommon merits of mine along with it—Other than that it is singularly adapted to the *Exigencies* of the Clime of *Great Britain*—That it is also a National as well as private benefit—And never in any age before, like now wanted—

WITHAL

WITHAL this being possibly the only opportunity I may ever have of considering again one part of the subject matter in an abstracted light—In particular with regard to such a man of Fortune, who is not at the Head of Publick affairs: In which case I hope I may be pardon'd putting the Question to him, how much soever He is in all other respects above my dictating to Him—What Geoponic Scheme at least is there on foot, so likely as to a Raiser and Reformer of great quantities of the Objects meant, to make ages to come his own? What artful attempts are there in any other parts of nature, that can be said to be *great* in a prosperous Issue, can be less dangerous to succeed in than this?

BUT if neither a lasting Memory, nor Security of Success, are motives strong enough for a man of Figure to engage therein on his own account: Surely collateral Humanity—natural Affection—and what among the *Brave*, have the ascendant of every other Incentive; strict Honour and the generous Love of their Country, will set all the tender motions a going, in every such

such respective *Britons* breast, to make some compensation to *Posterity*, in lieu of the national Debt, *Monstrum Horrendum!* which we the unhappy Insolvents have laid upon them; And what surer, what less pervertible way is there than this alluded to, the fruits of which they, and only they can fully enjoy?

I AM sensible it is apparently more than time for me to consider now, on the accountableness of my Presumption of this Mechanism, or my other Monitions being any whit attended to by men of Figure, or not: As coming from so obscure a Writer as my self—But, among all my ignorances, I need not be told of the more captivating influences on a Reader's judgment, either of an establisht character in the Publisher—A royal Patent—Or some express Illustrious Patron to give a work of this kind an Eclat—Now a Bookseller indeed, who was to buy the Copy, might justly fear he shou'd not have a numerous Sale: But the want thereof I regret not on my own account: Especially as such my obscurity, and unrecommended Publication hereof, is all those Oak proprietors advantage,

advantage, into whose hands, it may notwithstanding chance to fall—As therefrom their own judgment is left at the fuller liberty—And as they are not awed to give up a single doubt to any jurisdicative Pens.

My own purposes and good wishes will likewise be the better answered among such my Confraternity—As their own free-thinking on the subject will the readier facilitate their making of many more discoveries, than if constrained, as it were, to content themselves with bare, humble imitations only—Or at most with making of a few petty, inconsiderable amendments on such their more Masterlike Mechanicians.

As to the smaller inaccuracies, which from the unlimited exercise of their own ingenious faculties, and the Sovereignty over their own thoughts, which they may find herein, it is possible, I might have saved them the trouble of animadverting on, had I not of late discontinued my further Researches of this kind, for want of better Health; and the same at this time will

will I hope be some apology for all the imperfections in the verbal representation of the past—And as to some few grosser Errors either in Principle, or Practice, which for ought I will pretend to say to the contrary, may have escap'd me; I shall think they will do me a great Pleasure and this little work a great Honour by their rectifying—

I THINK not my self either criminal enough, or considerable enough, to be attack'd on such accounts, by any Captious Critick—And if I were, I despair not, but every ingenuous Oak proprietor will upon mature *Trials* acknowledge, that I have previously paved divers Paths—levell'd many Hills—And with much labour, built him some Bridges, in places inaccessible before, for his better accommodation and ease of Travelling, in this late uncultivated Field of Nature.

F I N I S.

P

10 OCT 1958

350

The Author not having had the Opportunity
of correcting the Press, the Reader is de-
sired to pardon the following Errata.

<i>Page</i>	<i>Line</i>	<i>for</i>	<i>read</i>
7	22	pre-pretended	pretended.
17	23	deriveable	desirable.
64	15	ground	round.
101	12	ineptitudinem	ineptitudinem.
102	11	tuberos	tubulous.
149	10	would be	would, I say, be.
169	4	promising	premissing.

All the terms of the contract for all the
 property in the vessel: transportation
 and a small sum for the crew.

The Author not being the Opportunity
 of correcting the Reader is de-
 sired to pardon the following errors.



Page	Line	for	was
7	22	pre-pretended	pretended.
27	23	derivable	derivable.
64	15	ground	round.
101	12	inquitiveness	inquitiveness.
102	11	tuberos	tubulous.
140	19	would be	would, I say, be.
160	4	promising	promising.

P. M. I. E.

